OKLAHOMA STREAM-FORMED BOUNDARIES: A GEOGRAPHICAL ANALYSIS OF LEGAL ISSUES

By

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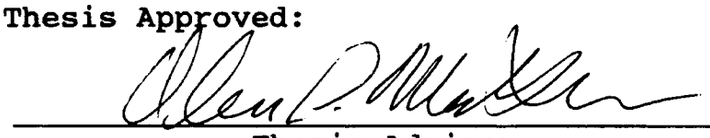

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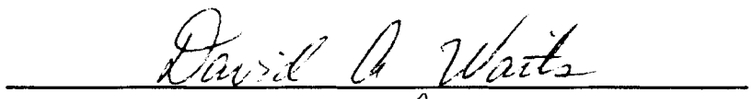

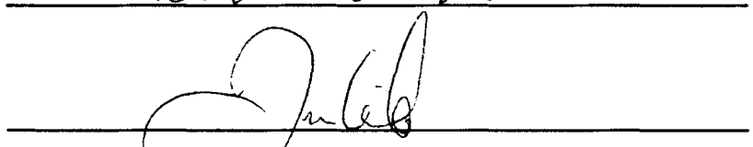

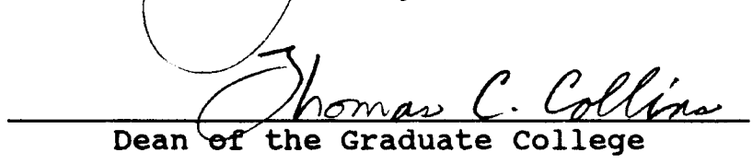

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CHAPTER I

INTRODUCTION

The study of boundaries is an interesting and complicated subject that has intrigued scholars for ages. Boundary changes on the international scale have traditionally been studied by political geographers but internal boundaries and disputes between property owners, while as geographically important, have received less attention (Buckholts 1966; Bergman 1975). Boundary movements are complicated because a single and seemingly insignificant boundary change may have impacts at more than one scale (Matthews 1988).

Boundary delimitation at different scales may use natural features or be geometric. Perhaps the best example of this is the "metes and bounds" method of legal description that delineates land areas with descriptions using natural features, angles and distances (Hartshorne 1933). In the western United States the township and range system ignores most physical features and bases itself on principal meridians and a baseline for defining a grid pattern (Hagman 1980). The structure of this system helps avoid the complications of the "metes and bounds" system but even in areas where the township and range system is utilized, rivers and streams continue to be used in legal descriptions because of their barrier-like qualities.

Unlike most natural boundaries, rivers and streams are

mobile, complicating the legal problem of determining where boundaries really are. Traditionally, boundaries defined by a stream or river move with the river if the movement is caused by a natural or gradual process. A sudden shift in the stream's bed however does not affect the position of the boundary prior to the movement. Although some in the legal profession feel property lines should move with rivers and streams only when these new lines do not conflict with section lines, the long established tradition of using these natural boundaries will most likely continue (Hettinger 1977).

Purpose of the Study

Jurisdiction over, or ownership of resources controls many resource management decisions; jurisdiction and ownership are controlled by laws which depend on geographic processes in determining river boundaries. Without fully understanding law and geography, a landowner or resource manager will have difficulty making viable management decisions.

This study analyzes the problems associated with stream-formed boundaries in the state of Oklahoma. Because the boundary determines who owns both the land surface and the subsurface mineral rights, mobile boundaries create additional problems in determining rights. Oklahoma streams and their beds move fairly frequently making it crucial to

know the stream bed's legal description, the geographic processes controlling movement, and how the legal system resolves disputes. This thesis will analyze each of these factors by explaining the processes that govern streams' movements and analyzing the Oklahoma conflicts that result from this movement.

The case studies used will help to develop a theoretical base for the management of transboundary resources. Transboundary resource issues have been classified into four spatial categories including unstable boundaries (Matthews 1988). This classification links the field of law to geographic concepts in an attempt to gain insight into more acceptable management policies. Although the legal system resolves conflicts resulting from stream bed movement, the geographic nature of the processes involved is not always fully understood. This study will point out the geographic nature of stream-formed boundary changes and link geography to the laws that regulate bed ownership.

To date, little work has been done by geographers on this subject matter, particularly at the local level (Bowman 1923; Brigham 1919; Kristof 1959; Jones 1959; Johnson 1917; Hartshorne 1949). Various studies and articles have been published by those in the legal system but most lack the essential geographic perspective that aids in clarifying the issue. This thesis will serve as a starting point for state

by state comparisons of stream-formed boundary regulations. Additionally, it will shed light on transboundary resource issues in the other three spatial categories discussed later.

The following are the goals of the study:

1.) Inadequacies in the Oklahoma laws governing stream-formed boundary changes and bed ownership will be revealed, allowing new state statutes to be proposed.

2.) This study will form the basis for similar studies in other states which can then be incorporated into a model state law.

3.) By examining laws governing stream-formed boundaries in Oklahoma, geographers will gain insight into conflicts at other scales as well as the geographic processes that create these conflicts.

Justification of the Study

In the state of Oklahoma, valuable deposits of natural gas and oil and various other non-fuel minerals occur in relative abundance so the interpretation of the laws governing these deposits is important. Without an understanding of how these laws work and the geographic nature of the processes that result in stream boundary movement, viable decisions concerning possible improvements

in managing the resources cannot be made.

Subsurface mineral deposits and the resulting disputes between adjacent property owners are not the only reason stream-formed boundaries are important. In many cases the movement of boundaries may have an impact on Indian lands, adding a federal element to dispute resolution. The interpretation of the laws that settle these disputes are also important, especially in states such as Oklahoma that have a substantial amount of tribal lands and a strong Indian heritage.

The movement of stream-formed boundaries can often involve large, valuable tracts of riparian land. Even if no valuable minerals are involved, these disputes are of special importance to the parties involved for a number of reasons. In many cases the lands in question are family farms, handed down for generations and the monetary value of the land involved may not be the primary issue. Though a lack of monetary importance may sometimes exist, the agricultural value is often equal to or greater than the mineral resource value. In addition to the value of the land and the minerals below it, access to and the use of water may also be an issue.

Since each state's laws governing the subject of riparian ownership vary, making comparisons and generalizations about the entire United States is difficult without first understanding individual state policies.

Additional case studies will allow comparisons between individual state laws so the more successful characteristics of these different legal systems can be identified. Eventually a recommendation for a model state law can be made from the better understanding of each state's riparian ownership laws.

A Review of Boundary Literature

Boundary studies are system-oriented and multidisciplinary because they must conceptualize physical and human features in a spatial context. This occurs because of the logical and psychological need to break an immense amount of information into groups that are easily identified (Strassoldo 1977).

With such a close relationship between the information and interests of the various disciplines, the background literature on boundaries must be multidisciplinary. In the case of Oklahoma stream-formed boundaries and bed ownership, the field of geography, particularly the physical and political aspects, must be integrated with political science and law to adequately analyze the conflicts that result from streams' movements. Strassoldo (1977) classifies boundary information in a number of ways including spatial boundaries, the difference between the closely related ideas of boundaries and borders, and the hierarchy of system levels, each of which will be utilized to some extent in

this thesis.

In early boundary studies conducted by lawyers and social scientists, state (country) boundaries were the most important. In modern history, "every work in international law has included a chapter on the functions, structure, and typology of state boundaries" (Strassoldo 82, 1977). Perhaps the most commonly discussed idea in these works is that of constructing an "optimum" boundary, its spatial extent, and its demarcation. Many of these discussions rely on Roman law and its method of dealing with the boundaries of private lands (Soja 1974). The historic evolution of Oklahoma's common law will be traced for both stream-formed boundaries and bed ownership.

The field of political science has also contributed to the study of boundaries (Gross 1966; Dahl 1963; Wright 1955; Boulding 1963; Little 1960). Because it is a science concerned with the state and other political territories political science has always dealt with the problems and conflicts associated with boundaries. The traditional concern of political scientists involved the boundary problems associated with interstate conflict where borders are considered a source of tension as well as looking at boundary conflicts at local (city/county) levels (Gross 1966). The idea of a boundary as a source of tension can also be applied at a larger scale between individual land owners as the cases analyzed in this thesis will

demonstrate.

While the contributions of lawyers and political scientists to the study of boundaries have been significant, they have relied on the perspective of geographers and the materials they have collected and described. Geographers like Haushofer (1927), Bowman (1923), Brigham (1919), Cohen (1963), and Hartshorne (1936) have all made major contributions to the study of boundaries as have other geographers too numerous to mention. Anyone wishing to specialize in the study of boundaries would be well served to have a strong geographic background like many of the military geographers who became boundary scholars (Adami 1927; Holdich 1916; Haushofer 1927).

Geographic subdisciplines such as economic, urban, and physical geography are concerned with boundaries but the most important to this paper is political geography. The political geography subfield can lay claim to some of the most important works done on boundaries (Peattie 1944), as well as some of its greatest distortions through the emergence of German Geopolitics. "The geopoliticians produced a wealth of papers and books on boundaries--not only empirical-descriptive, like the works of most geographers, nor mainly normative, like those of the lawyers, but purportedly theoretical" (Strassoldo 89, 1977). The 1960's reevaluation of political geography has resulted in a resurgence of interest in the subfield.

Modern political geography is different from its historic predecessor in that it is less defensive of its value. Instead of trying to prove it is the most general of the human sciences, it is now more willing to integrate itself with the fields of political science and law, among others (Matthews 1988; Platt 1976; Bowman 1923). This new openness has resulted in the reduction of the nation-state's dominance in the literature, allowing more attention to be paid to boundaries between other human groupings (Matthews 1988). Some of the new groupings included in this thesis are the federal, state, local, and individual landowners in the state of Oklahoma.

The Stream Bed as a Boundary

The geographic nature of stream-formed boundaries and bed ownership in the state of Oklahoma is established through the stream bed's function as a boundary. Streams and rivers, when discussed in such terms, generally fall under the category of "natural" or "physical" boundaries and have long been of interest to political geographers and scholars in related fields (Pearcy and Fifield 1948; Buckholts 1966; Bergman 1975). This interest is at least partially due to the stream bed's dual function as both a line, such as when it is depicted on maps, and a zone, since the stream bed is actually an area of land subject to ownership.

These "natural boundaries" have played a key role in political geography since many conflicts studied were a result of countries justifying territorial expansion in terms of growing to reach their "natural boundaries" (Bergman 1975). While this expansion concept is rejected by most in the fields of history and geography on the basis that features like rivers and streams make effective political boundaries only when they are chosen as boundaries by man, their existence and historic importance are undeniable (Bergman 1975).

Questioning the practicality of natural boundaries seems futile since their use as international, national, state, and local boundaries is a common and continuing occurrence. It seems more useful to examine the problems created by these boundaries. The historic reasons for using streams and rivers as boundaries between political units may be tied to human perception since rivers are naturally psychological and physical barriers. Another reason might be their linear appearance on maps. Studies in various fields, including geography, contain ample instances where these lines were perceived to be of major military or economic importance (Boggs 1937; Bowman 1923; Cohen 1984; Alexander 1953). These beliefs, true or not, often resulted in boundary disputes and even armed conflicts (Olsen 1970).

Boundary disputes at various scales have occurred throughout history because, among other reasons, the

supposed "linear" attributes of rivers and streams are generally limited to maps. That is, while they may look well defined on maps, their appearance and occurrence on the ground is generally not well defined. While there has been a historic preference of river and stream boundaries, some in the field of geography have pointed out the difficulties that result from their "mobile" nature (Matthews 1988; Minghi 1963). In fact, most of the boundary disputes between states in the U.S. (and a number of disputes at the local level) have been over river and stream-formed boundaries (Wiegert et al. 1957; Bowman 1923).

While the use of rivers and streams as boundaries have been rejected by some, their use has been accepted by political geographers like Van Valkenburg and Stoltz:

> Rivers as international boundaries have two advantages, or it may be said functions. They separate and consequently protect, and at the same time they offer a definite base for a boundary demarcation. In the latter case, the rivers--like mountains when they are used in this way--constitute a zone and not a line, and the real boundary is only man's interpretation of the use of that zone. A boundary can be drawn along either bank, in the center of the stream, or in the mid-channel (101, 1954).

While the reference to river boundaries as zones was directed toward their use as international boundaries, there are many similarities between this use and their use within states and at the local level. This zone function is a result of different areas of ownership on different classifications of streams. Federal and state ownership of

navigable stream beds often extends to the Ordinary High Water Line (OHWL), the Ordinary Low Water Line (OLWL), or a combination of the two. Personal ownership of non-navigable stream beds is generally extended to the midpoint of the stream or its current (Matthews 1984).

Textbooks in political geography have always stressed the importance of natural features as boundaries (Norris and Haring 1980). Some research has even been done by geographers in an effort to show the importance of the relationship between geography and law when dealing with stream bed ownership and water rights (Matthews 1984). This legal/geographic perspective is not wide-spread and few have attempted to look at these issues on the state and local levels (Bowman 1923).

The spatial classification developed by Matthews (1988) is designed to aid in the evaluation of transboundary resource issues and the subject of stream bed ownership and boundary change fits well into the unstable boundary category. The case study method of analyzing judicial resolutions at the federal, state, and local levels also fit in the three dimensional matrix that will be discussed in the methodology section.

Among the issues analyzed in this study will be the definition of a stream bed in Oklahoma, who owns it, and how it moves. The differences between line or incised streams and frequently moving streams will also be addressed.

Braided streams are a common occurrence in the western part of Oklahoma while line or incised streams dominate the eastern part of the state. This study will analyze how Oklahoma courts have dealt with disputes involving these different varieties of boundaries. Surface and subsurface rights are also important issues in Oklahoma, and the state's peculiar doctrine concerning severed mineral estates is also addressed.

Methodology

There are a number of methods available for analyzing resource conflicts. However, since the problem of boundary shifts is geographic, a spatial approach seems most logical. A classification has been designed where the geographic concepts of space and scale are integrated with law in an effort to evaluate transboundary resource issues (Matthews 1988). Because the problem of stream-formed boundaries and bed ownership fits readily within its framework, the existing classification will be used. The three main elements of this classification are: spatial categories, scale, and legal process (Figure 1). Combining these variables results in a three dimensional matrix that accounts for every type of transboundary resource conflict (Figure 1).

The spatial category most applicable to this study is the unstable boundary subcategory since stream-formed

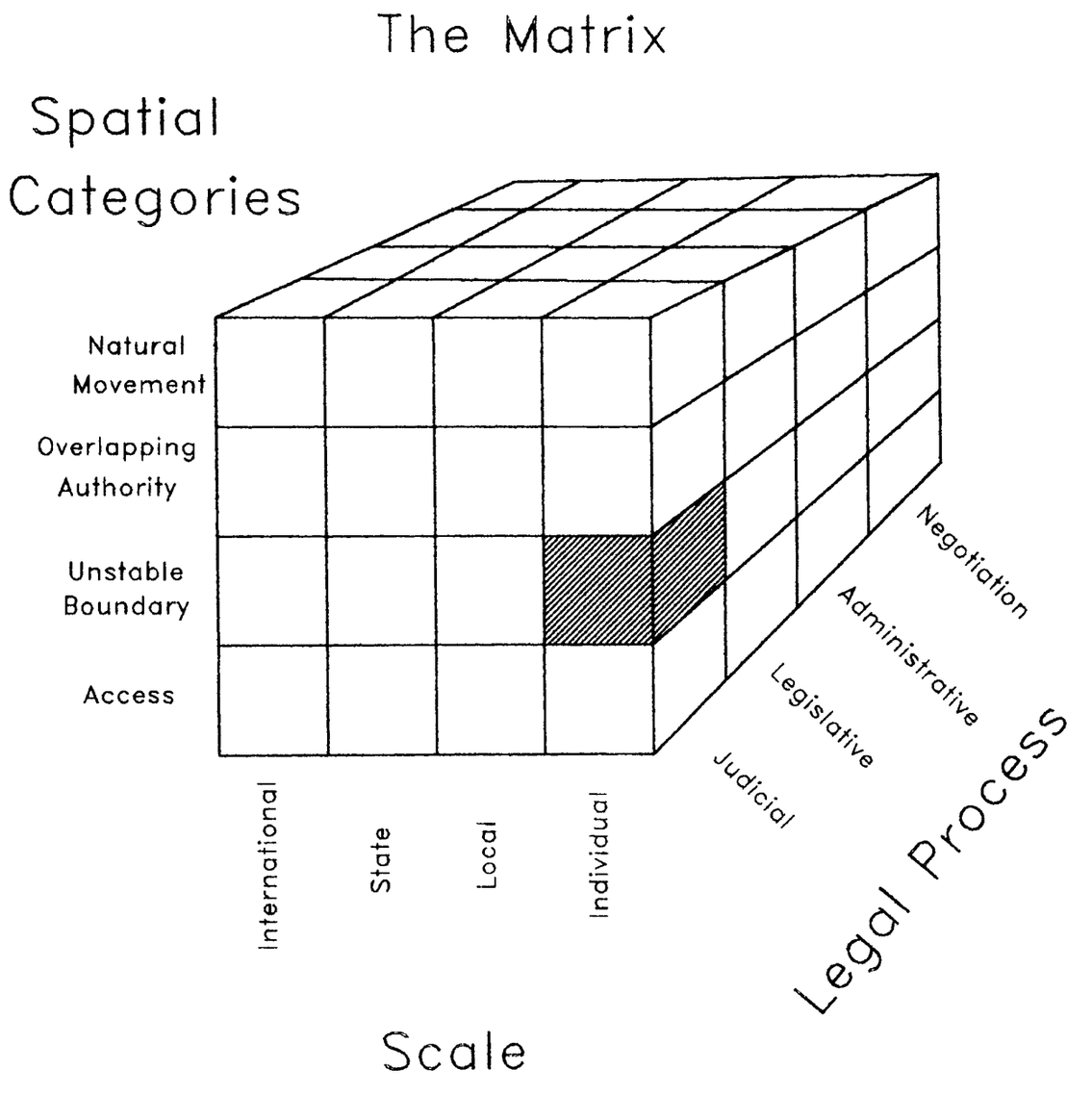

Figure 1. Matthews' Model: The Matrix

boundaries in the state of Oklahoma move with such frequency. The scales involved in this study will include the federal and state governments as landowners and individual or private landowners. Since this study analyzes court cases, the most important legal process will involve the judicial resolution of conflicts. There is a possibility however, that the results of this study could eventually affect future legislative actions. Since only a small portion of this matrix is utilized in this study the size of the study is decreased and the results can be more concise. By analyzing the disputes within the given classification system, a better understanding of the legal and geographic processes behind stream bed ownership will be reached and comparisons between state policies can eventually be made.

The cases analyzed in this study will come from the Oklahoma State Annotated Statutes governing riparian land and bed ownership. The cases considered most important on each of the various issues are referenced as precedents and reflect the laws as interpreted by the courts. By analyzing these cases in the context of the classification system, a better understanding of how these laws are interpreted and ideas for improvements can be gained.

Case Criteria

Detailed analysis of all the cases referenced in the

Oklahoma statutes would require between 20 and 30 case studies, a task too extensive for the scope of this study. Since it is not feasible to study each case separately, the cases for study were chosen by classifying all of the cases using the following criteria. The case (or cases) that best illustrates its category was then chosen. The criteria which follow are unique to the state of Oklahoma or vital to the study of stream bed ownership:

1.) The distinction between accretion and avulsion.

2.) The involvement of Indian and federal interests in bed ownership.

3.) The "Reappearing Riparian Lands Doctrine."

4.) The concept of severed mineral estates.

The selection process using the above criteria will allow for an extensive examination of stream-related boundary problems in Oklahoma. Some cases will involve more than one of the necessary aspects while some criteria will require more than one case for adequate explanation. When complete, the study of five or six important Oklahoma cases will aid in the explanation of this mobile resource problem.

Evaluation Procedures

The cases chosen on the established criteria will be analyzed by a legal evaluation of the case answering the following questions:

1.) Relevant Facts - What were the circumstances surrounding the case? What are the facts that were important to the decision?

2.) Issues - What questions are presented to the decision makers?

3.) Holding - What answers do the decision makers give to the questions?

4.) Reasoning - What reasons are presented in the case in support of the holdings?

Following the legal evaluation of the case is an evaluation of the result including an opinion as to whether the case was correctly decided in terms of the considerations given to the geographic processes involved.

Maps of the areas involved in the cases accompany the analysis as well as any diagrams or charts that aid explanation. The maps have been compiled from U.S.G.S. topographic quadrangles and aerial photographs from the time periods relevant to each case. Legal descriptions included in individual cases were also used when available. The portrayal of the areas in question, while not entirely accurate from a mapping standpoint are only intended to aid the reader in the visualization of stream-formed boundary shifts and the amounts of land involved.

While the evaluation of the individual cases is the main thrust of this study, it must be preceded by a necessary legal and geographic background. The physical

processes leading to stream bed movement must be understood to accurately evaluate the cases in terms of how well the legal decision corresponds to the geographic nature of its movement. Likewise, a knowledge of the legal processes and policies resulting in resource management decisions is also a necessary component of this paper.

CHAPTER II

STREAM MOVEMENT AND BED OWNERSHIP: LEGAL BACKGROUND

Introduction

Understanding the laws governing stream boundaries and bed ownership requires a knowledge of how these laws came into existence. Since federal, state, and local laws sometimes fail to correspond exactly, it is important to know the definitions from which these laws are derived. In addition to knowing the legal definitions, it is important to have a knowledge of the physical processes that result in stream movements. This chapter explains and analyzes the necessary background information and definitions concerning stream-formed boundary movements.

The problems associated with stream-formed boundaries are not new since the physical processes dictating stream movement have always existed. Every stream continually rearranges its sediment, or bed composition, by scouring and filling in response to variations in velocity and the volume of flow. During periods of high water and greater velocity the stream is able to scour its bed by picking up particles from its floor and moving them downstream. Likewise, in periods of low water and less velocity the stream is unable to carry the heavier particles which are added to the downstream bed. In this way a stream can alter the shape and location of its bed (McKnight 1990).

The variation of stream flow is shown in different ways, but the most important to this paper is the variation in stream bed pattern. If a stream's flow were smooth and regular, one could expect the bed of such a stream to be straight and direct. Stream channels, however are rarely straight for an extended distance and instead wind or meander, following the path of least resistance, which may be dictated by the underlying geologic structure and gradient (Tarbuck and Lutgens 1985).

Where stream gradient is steep, downcutting is the main activity, and meandering or channel widening is generally slow. These types of streams are sometimes referred to as "incised". Some widening however, will take place as a result of the water's limited lateral movement and the combined efforts of mass wasting, weathering, and overland flow. Generally speaking however, a stream's ability to meander is directly related to its slope and the size of its floodplain (Tarbuck and Lutgens 1985).

In areas with gentle slopes and larger floodplains, the stream's energy is diverted into a meandering, side to side flow pattern. As the stream's waters begin to move from side to side, lateral erosion is initiated because the principal current of the stream swings laterally from one bank to the other. When this happens, the stream erodes where the velocity is greatest and deposits it where it is least. Since water moves fastest on the outside of the

meander this is where the erosion or bank cutting takes place (Figure 2). Conversely, on the inside of the meanders the water flow is much slower causing it to drop the heavier particles and resulting in the accumulation of sediment (Figure 2).

Over extended periods of time the meandering of streams can cause the location of the stream bed to move. In addition the meandering widens the floodplain increasing the ability of the stream bed within it to move. The widening of the floodplain can also result in the stream spreading out, flowing in many different channels separated by low islands of sediment and debris. Such streams are termed "braided" and provide an especially difficult legal problem since determining the location of a single bed can be difficult.

These different types of streams can all be found in Oklahoma. The eastern and southeastern parts of the state are dominated mainly by incised streams. In the west however, meandering and braided streams are the dominant type, unstable and able to move their beds great distances in short periods of time.

Accretion Versus Avulsion

Beds and banks of streams and rivers are realities of physical geography but have specific legal meanings which determine where the actual boundary is found. Changes in

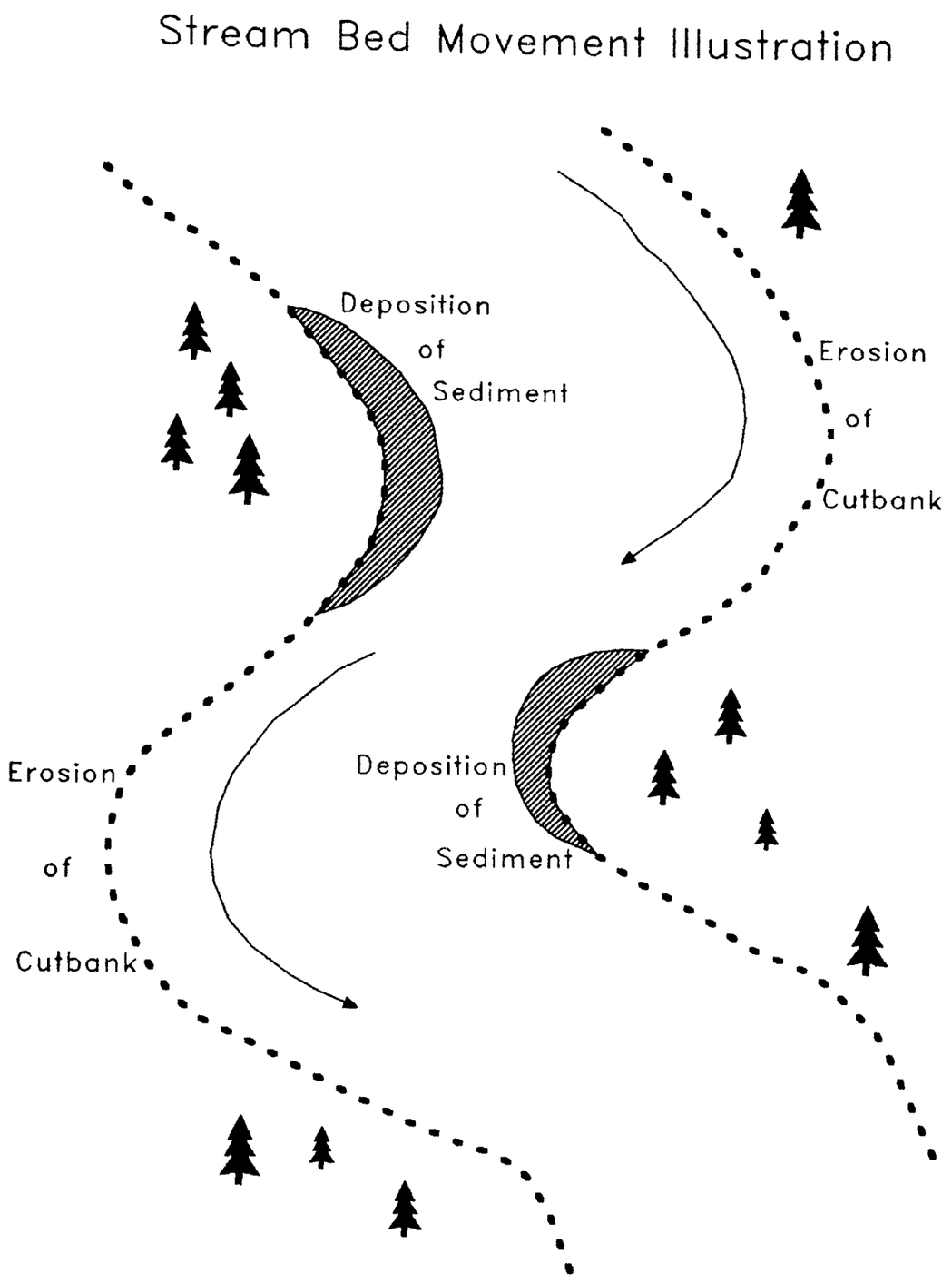

Figure 2. Stream Bed Movement Illustration

the bed or banks of a river or stream can change the boundary depending on whether accretion or avulsion occurs. These terms have meaning within both a physical and legal context.

Accretion is usually defined as the "gradual and imperceptible deposit of soil in a certain place so that it becomes dry fast land" (Beck 431, 1967). This gradual and imperceptible deposit of soil is a result of the meandering process mentioned earlier. Though the process involved on the outside of the meander is erosion and not deposition, it is included in the definition of accretion since deposition and erosion work simultaneously to move a stream's bed.

In contrast, the term avulsion is used to describe the event of water changing its location suddenly, when the river leaves its old bank and forms a new one. This process is usually defined as a single event such as a flood, or the breaking of a meander forming an ox-bow lake, and includes the inundating or submerging process (Beck 1967). While these definitions appear to be simple ones, the interpretation of accretion and avulsion have varied widely depending on the court attempting to define them.

Other definitions that are closely associated with accretion and avulsion are as follows:

1.) Dereliction occurs when water recedes and bares land in the process (Beck 1967).

2.) Erosion is the loss of soil due to the gradual

encroachment of water (Kimball 1986).

3.) Reliction is the baring of soil by an avulsive process (Beck 1967).

While each of these definitions is unique, courts tend to reduce the complexity resulting from so many terms by generalizing. For simplicity sake this study will use "accretion" to refer to dereliction and erosion because both are a part of the accretion process. Likewise, the term "avulsion" will include both the inundating and the baring of soil through a single event.

Accretion Theories

Accreted land, or land gained by a stream's movement, is given to the riparian landowner, i.e., the owner of the land adjoining the waterbody. The idea behind giving the riparian landowner the accreted land comes from common law and is based on a number of different theories or doctrines. All of these doctrines are important but cannot fully explain the process without relying to some extent on the others.

One of the earliest doctrines for giving accreted land to the riparian landowner is termed the "analogy to accession," which has its roots in the Napoleonic code (Beck 1967). The analogy to accession compares accreted land to the creation of new property such as--the owner of a fruit tree is generally the owner of the fruit it bears, so the

riparian landowner should be entitled to the land "created" through the accretion process.

A second theory deals with streams' and rivers' function as natural boundaries. If the river is a natural boundary, then the river's movements through natural processes should result in the movement of the boundary it forms. This idea was upheld in 1887 when, in the case of *Welles v. Bailey* the Supreme Court of Errors in Connecticut stated:

> All original lines submerged by the river have ceased to exist; the river is itself a natural boundary, and every changing condition of the river in relation to adjoining lands is treated as a natural relation, and is not affected in any manner by the relations of the river and the land at any former period... The river boundary is treated in all cases as a natural boundary, and the rights of the parties as changing with the change of the bed (292).

While some courts have ruled that this doctrine should apply only if the fixed boundaries could not be identified, there have been cases where the fixed boundaries could be readily identified but the accretion rule was upheld (*Wilcox v. Pinney* 1959; *Worm v. Crowell* 1958).

The third accretion theory is based on the concept that since accretion is the gradual and imperceptible addition of land, "in theory there is not very much added during any given year or even during say a ten year period, therefore it is too little to worry about either by a court or someone other than the riparian owner" (Beck 434, 1967). This theory is a simple one to understand but is not entirely

correct since there is often hundreds of acres of land to care about. If no one but the contiguous landowner cared about this accreted land, then there would be no legal disputes to resolve. The abundance of conflicts in Oklahoma and the other states are evidence that this is not the rule but an exception to it.

A fourth theory deals with the law's need to favor the productive use of all lands. This doctrine awards accretions to the owners of riparian lands because they are in a better position to use the land productively than the landowners on the opposing bank (Kimball 1986). This doctrine applies especially well to agricultural uses since access to accreted land would be vital to its use as farmland. The doctrine, however, fails to consider the occurrence and development of mineral deposits that can often be exploited just as easily without extensive surface access.

Another rationale for the accretion rule is the doctrine's even-handed appearance: the landowners who bear the potential for a loss of land may also benefit from the resulting gains by the same process (Kimball 1986). This doctrine is logical but does not help in the legal arena since every landowner dislikes losing property and wants to protect his or her investment.

The accretion rule is also supported because "it ensures that owners of lands bounded by water will continue

to enjoy their riparian rights and access to water even if the boundary water shifts" (Kimball 235, 1986). Access to water is becoming an increasingly important issue as water resources become more scarce. Across the eastern U.S. the riparian landowner generally benefits from a reasonable use of adjacent water. In the west water rights are unrelated to ownership of adjacent land. In all the U.S. ownership of the bed is important.

A last argument in support of the accretion rule is that the doctrine is supposedly easy for courts and laymen to apply (Kimball 1986). While this may seem true initially, the application of the rule is dependent upon the interpretation of the definitions involved and these interpretation are extremely subjective. While a certain amount of subjectivity may not be a problem in some cases, it has generally created a gray area in the law that results in reoccurring conflicts.

Subjectivity of Definitions and Their Importance

Because the definitions of accretion and avulsion are subjective, the interpretation of these terms, particularly in the court system, are varied and have been applied inconsistently. "Imperceptible" is defined by the courts as "only as it is formed, it does not matter if it is discernible by comparison at two distinct points in time" (*Jeffries v. East Omaha Land Co.* 191, 1890). A problem

arises here in determining when two distinct points in time are established. Is it a week, a day, an hour, a minute, or even a second? Two given points in time can be defined subjectively as many different ways as there are interpreters. In different court cases over the years, the courts have defined "imperceptible" as being: 450 acres "in a short time," (*Jeffries v. East Omaha Land Co.* 193, 1890), two miles in 50 years (*McBride v. Steinweden* 1906), 300 feet in three years (*Solomon v. Sioux City* 1952), and 140 feet in 22 years (*New Orleans v. United States* 1836). Recent decisions have become more consistent as a better understanding of the physical processes that result in accreted land has been gained. The definitions of accretion and avulsion still exist though, and the courts' responsibility to interpret these is still an important and difficult task.

The importance of these definitions should not be underestimated since their application determines when a boundary moves with the stream and when it does not. In most states, including Oklahoma, if the bed of a river or stream changes through accretion, then the boundary changes with it. If however, the bed of a river or stream changes through a single event, the boundary remains at its former location.

Interpreting these definitions may shift a landowner's rights to agricultural land and any subsurface mineral

deposits. In addition, property taxes may change as a result of land being gained or lost. Landowners generally feel strongly about the maintenance of their property boundaries, especially if they are apt to lose land when they continue to pay property taxes on it. Taxation continues because most counties cannot afford to update their tax maps as often as streams in the western part of the state move.

Stream Bed Ownership

One of the most important distinctions that must be made concerning the problems associated with stream-formed boundaries is the difference between a navigable river or stream and a nonnavigable stream. The reason this distinction is important is because of a potential for state interests in the beds underlying navigable waters. If a stream or river is considered navigable, then the state holds the bed, subject to a federal navigable servitude a term that will be discussed later. If the river or stream is nonnavigable then the title to the bed is generally held by the riparian landowner and extends to the midpoint of the stream or sometimes to the center of its main current or "thalweg."

In 1824 the United States Supreme Court began interpreting the Constitution's commerce clause as giving Congress the authority to enact laws regulating navigable

waterbodies (*Gibbons v. Ogden* 1824). The definition of a navigable waterbody was derived from English common law and extended only to those areas that were influenced by the tides. Since in England the tides influence all water bodies suitable for navigation, the definition was quite adequate. To regulate commerce, the crown needed to regulate only the tidal influenced bodies of water (Washburn 1983).

Because the United States government assumed most of the same powers formerly held by the crown, the idea of regulating commerce was originally extended only to tidal waters (Washburn 1983). As the United States began to expand, the government and the courts soon realized that regulating commercial waterbodies would require a more extensive definition of navigability since there were many rivers that were suitable for commercial navigation that were not influenced by the tides. In 1851, with the Supreme Court's decision in *Genessee Chief v. Fitzhugh,* the definition of a navigable waterbody was extended to non-tidal areas which were capable of use for navigation.

Individual states take ownership of the beds of navigable waterbodies subject to the federal navigable servitude. The states have ownership of the navigable waterbody beds provided those streams or rivers are usable as a commercial highway in their natural condition (*Oklahoma v. Texas* 1922). The states only received ownership of the

beds of those waterbodies that were considered navigable at statehood (Davis 1978).

State ownership of the beds of navigable waterbodies is derived from common law which recognized ownership by the crown. This rule applied to the beds of waterbodies in England and its colonies. The original 13 states gained title as successor to the crown and subsequent states received title to the waterbodies that were navigable at statehood. This is required by the Constitution's "equal footing doctrine" (*Pollard's Lessee v. Hagan* 1824).

In addition to the navigable servitude, the Constitution's Commerce Clause has been interpreted in a manner that extends the jurisdiction of federal regulation to include water bodies that can be made navigable with reasonable improvements. The determination of "reasonable improvements," not fixed at a prior date, is allowed to change with technology so that streams not considered navigable now may be reclassified at a later time (*United States v. Appalachian Elec. Power Co.* 1948).

Also included in the list of waterbodies subject to federal regulation are those rivers or streams that are not navigable but form portions of a navigable stream and those non-navigable tributaries of navigable streams (*Oklahoma ex. rel. Phillips v. Guy F. Atkinson Co.* 1941). The problem of subjectivity again arises this time when trying to determine the point in time that water becomes the tributary of a

navigable stream.

When taken to the extreme, nearly all water on the earth's surface is either navigable or eventually flows into a navigable waterbody. In 1982 the case of *Sporhase v. Nebraska* resulted in groundwater being declared an article of commerce. Because it is an article of commerce, the federal government already has the power to regulate it but could also claim regulatory power due to its navigability. Because groundwater moves below the surface of the earth and sometimes feeds into surface flows of water, it could conceivably be considered a tributary to navigable waters.

The reasons a federal navigability definition is used are three-fold. First, title was conveyed by the federal government in all but the original 13 states (*Brewer Elliott Oil & Gas Co. v. United States* 1922). Second, the act of admitting a state to the Union is a federal action and the federal government should determine what incidents result from a state's admission to the Union (*United States v. Holt Bank* 1926). Third, since each state is admitted on an "equal footing," the constitution requires a uniform interpretation, which can best be made by the federal government (*United States v. Utah* 1931).

The term "navigability" should not be confused with the "navigational servitude," a term closely associated with navigability but not synonymous. Navigational servitude prohibits activities on waterbodies that are considered

inconsistent with commercial navigation. This concept was developed to protect the public's interest, or right of way over water bodies, without regard to the ownership of the beds and banks of these bodies. Navigational servitude prohibits obstructions to navigation and can be exercised without compensating riparian landowners for property losses (Matthews 1984).

Exceptions to State Ownership

There is an exception to the rule of state ownership in the case of an expressed grant or an "implied" grant of the bed of federally navigable water by the United States or its predecessor in title prior to statehood. If the United States government or the entity that owned the area before statehood granted the beds of these waters to an individual through an express grant, such a grant conveys title to the grantee free of any claims asserted by the state after statehood. In an express grant the title to the land in question will state specifically that ownership of the bed is being transferred; whether a grant is implied or not is a problem for the courts to decide. In addition, the federal government may reserve title to any navigable waterbody beds before statehood, free of subsequent state title claims (Davis 1983).

Non-express or "implied grants," by their nature are not always clear and must be interpreted by the courts as

issues are raised. There are three basic lines of authority. First, pre-statehood patents to abutting uplands do not carry title to the beds with them because the United States government holds the title to them in trust for future states and cannot impliedly grant it away. Second, if post statehood rules attach the bed title to the land patent title, then a pre-statehood federal patent will also carry the bed title with it. A final perspective on this issue gives pre-statehood patents title to the bed *ad medium filum aquae,* meaning that the title is carried by virtue of ownership of the abutting uplands (Washburn 1983).

Although states are entitled to ownership below the high water mark, some only claim ownership to the low water mark. States may also grant the beds of lakes and rivers to individuals through a "public trust easement," possibly involving more than a simple right of navigation. The state may preserve a permanent property interest requiring access to encumbered land, dictating the land's use, and allowing the state to revoke the easement without compensation (Harbison 1991).

Stream Bed Defined

The normal boundary between navigable water body beds and riparian land is the ordinary high-water line. The courts have seen many cases where this seemingly simple term caused conflicts between landowners and states. The

ordinary high-water line is the cause of many conflicts for two main reasons. First, lands that border waterbodies tend to be more valuable than lands without a waterfront because of the access to water and the aesthetic qualities associated with waterfront property. Second, "the ordinary high-water line divides lands that have historically been considered to be public in nature from lands capable of private ownership" (Washburn 549, 1983). Historically, the public's interest in navigable waterbodies was limited to their use as highways of commerce, but the current philosophy also embraces environmental values leading to conflicts between ecological protection groups and land developers of the adjacent property.

To understand this problem of stream bed ownership it is first helpful to know what composes the stream's bed. Upon entrance to the Union the title to the beds of all navigable waterbodies below the ordinary high-water line were passed to the states by reason of their sovereignty. The high water line was defined in 1973 as "that line below which no terrestrial plant life will grow because of the constant action of water" (*United States v. 21.54 Acres of Land*).

Ordinary High-Water Line Defined

Defining the ordinary high-water line or the ordinary high-water mark is not always precise. There are many

different lines of authority influencing the line's location. All tests use some type of physical evidence such as litter, erosion, shelving, or vegetation to determine the extent of the bed.

The first Supreme Court decision discussing criteria to be considered in locating the boundaries of a river was *Howard v. Ingersoll* (1851). The case involved the Chattahoochee River boundary between Alabama and Georgia. The court determined that the boundary of a river extended to the point where the bed of the stream ends and the bank begins:

> When the commissioners used the words "bank" and "river," they did so in the popular sense of both. When banks of rivers were spoken of, those boundaries were meant which contain their waters at their highest flow; and in that condition they make what is called the bed of the river. They knew that rivers have banks, shores, water, and a bed, and that the outer line on the bed of a river, on either side of it may be distinguished upon every stage of its water, high or low, at its highest or lowest current... Such a line may be found upon every river, from its source to its mouth. It requires no scientific exploration to find or mark it out. The eye traces it in going either up or down a river, in any stage of water (381).

This seeming security of an obvious boundary does not fit geographic reality. In the above case the court required physical evidence of the river bank and also discussed the suitability of the surrounding area for agricultural purposes.

The absence of terrestrial vegetation as a means for determining the extent of a stream's bed may be the most

important criterion since it is usually applied only when there is no clear evidence of shelving or litter. This method may also be the most subjective since it is sometimes difficult to determine where vegetation begins and ends and where the constant action of water stops being the controlling factor.

CHAPTER III

CASE ANALYSIS

Introduction

As previously stated, the cases analyzed will address four major issues vital to the subject of stream-formed boundaries and bed ownership: accretion and avulsion, the "reappearing riparian lands doctrine," severed mineral estates, and the involvement of Indian and federal interests in bed ownership. The analysis of selected cases for each of these categories will help clarify the position of Oklahoma's riparian land ownership laws.

Accretion Versus Avulsion

Accretion and avulsion, the most basic and commonly used concepts in riparian land disputes, are also the most subjective. Unlike ocean tides and currents which are usually consistent, rivers and streams move more frequently and the amount of their movement is unpredictable. If stream movement occurred from the same cause and was consistent in terms of the distance covered, perhaps some type of averaging system could be created to quantify these definitions. Since stream movement is not consistent however, this approach is not practical and ownership of disputed riparian lands is dependent upon the circumstances in individual cases.

The Oklahoma statutes state that Oklahoma follows the "general common law of accretion" (60 Okla. Stat. Ann. sec. 335). The statutes go on to state that land formed by natural causes and in an imperceptible way upon the bank of a river or stream, navigable or nonnavigable, by the recession of the stream, such land belongs to the owner of the bank. This approach is not an unusual one and nearly all states use the accretion doctrine as a method for determining riparian ownership.

Willet v. Miller

The term "accretion" as used in the state statutes was first defined by the Oklahoma Supreme Court in the *Willet v. Miller* decision (1936). This case involved the title to land and subsequent oil and gas leases located in Payne county, Section 9, Township 17 North, Range 3 East that lay adjacent to the non-navigable Cimarron River (Figure 3). Willett, the plaintiff in the case, obtained patent to the land in question in 1913 at which time the two lots involved, totalling about 31 acres, were bounded on the south by the Cimarron River (Figure 3).

Miller, Grimm, and Wiley the defendants, owned the lots directly south of the river's bank. The total area in question was about 218 acres, with the bed of the river moving over one-half mile to the south (Figure 3). The river's movement between 1913 and the time the case was

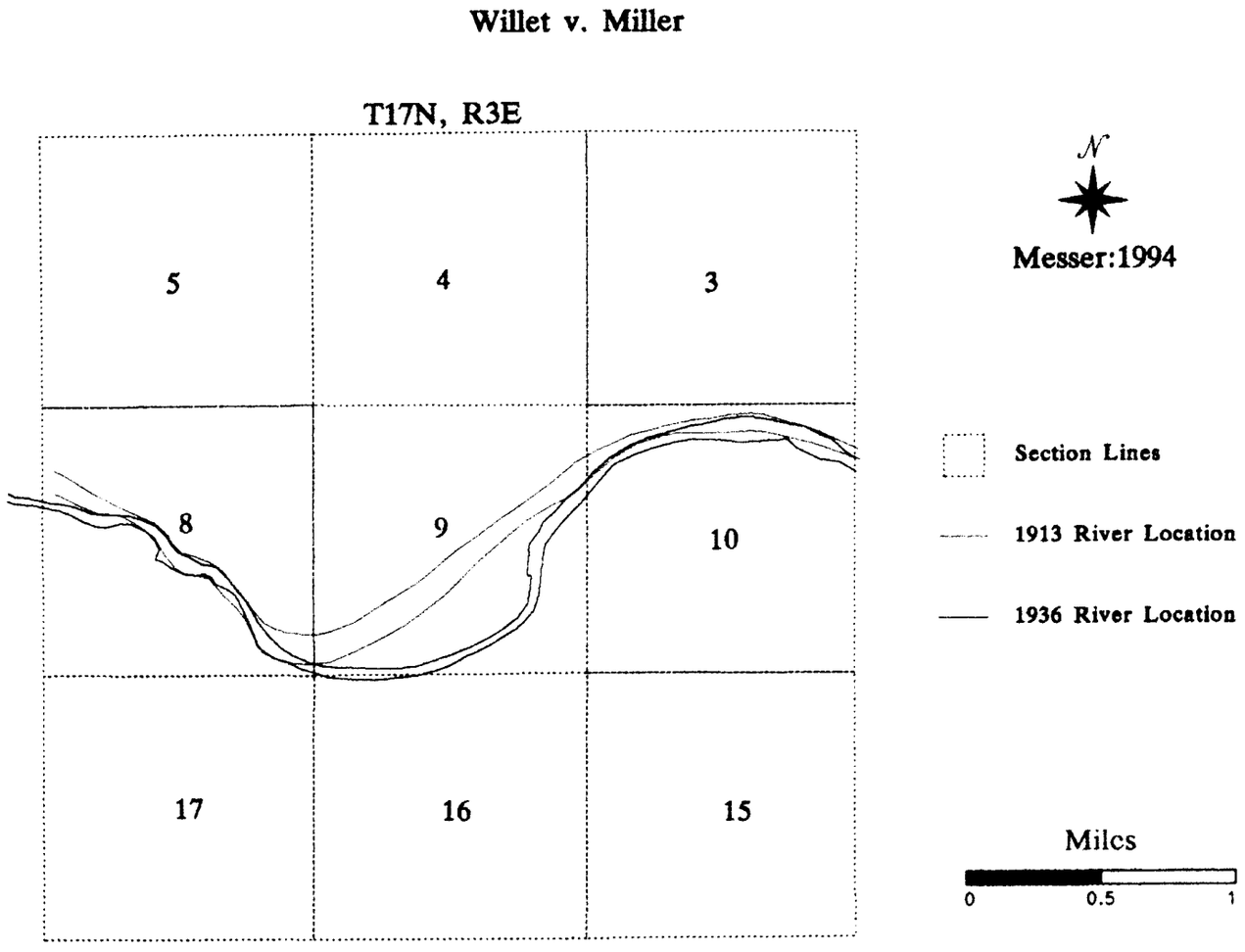

Figure 3. *Willet v. Miller* Case Map

filed took place through a series of floods during which large portions of the south bank were washed away. Witnesses testified that during a single flood lasting four to five days, as much as 300 feet of the south bank was washed away. Witnesses also testified that about the same amount of land would be added to the north bank so that the actual width of the river's bed remained fairly constant.

The issue in this case was not how far the river had moved but how the movement took place. The defendants claimed that the river's movement was not by the slow and gradual process of recession and accretion but by avulsion. The plaintiff argued that the movement was gradual and imperceptible since it moved only about one-half of a mile in two decades. The defendants won the case at the district court level and the Supreme Court's objective was to determine whether the findings and judgement of the trial court were against the clear weight of the evidence.

The Court eventually found in the defendants' favor and in the decision stated that the doctrine of accretion was well established in the common law and had often been held applicable in other states. The Court went on to define accretion as "a gradual increase of land by imperceptible degrees: the gradual and imperceptible accumulation of land" (90, 1936).

The reasons for the court's decision favoring the defendants concerned the definition of the terms "gradual

and imperceptible." The court determined that although the area of land in question was small considering the time period involved, the actual movement of the river's bed came in short spurts that could be clearly distinguished at the time they occurred. The finding in this case was significant because of the valuable oil leases involved but more importantly because it attempted to define the term "accretion."

Regarding an avulsive shift in a stream's bed, the statutes in Oklahoma suggest that the boundaries of the river or stream remain where they were before the shift took place (60 Okla. Ann. sec. 335). The statutes go on to distinguish between avulsion and accretion by saying:

> To constitute "avulsion," rather than "accretion," so as to preclude change in boundary between riparian owners, it is not necessary that soil washed away be identifiable; it being sufficient that change is so sudden that the owner of land washed away is able to point out approximately as much land added to opposite bank as he had washed away.

The statutes further state that the test is not whether witnesses can see a change from time to time but whether the change could be perceived as it was going on.

State of Oklahoma in Relation of the Commissioner's Land Office v. Warden et al.

One of the first cases involving the definition of "avulsion" was *State of Oklahoma in relation of the Commissioner's Land Office v. Warden et al.* (1948). The case concerned land in McClain county that was formerly a

part of Indian Territory, in the southwest quarter of section 36, Township 10 north, Range 4 west, bordering the non-navigable South Canadian River (Figure 4).

The issues involved in the case were nearly identical to the *Willett v. Miller* case with the Supreme Court evaluating the trial court's decision. The amount of movement of the river was not so much the question as was the means by which the movement took place. While the issues resulting in the lower court decision being overturned did not deal exclusively with the difference between avulsion and accretion, a definition of avulsion was produced.

Until this decision in 1948 there had been no attempt to define the term avulsion and for that reason this case is of particular importance. The court stated that in the most literal sense the term "avulsion" means "a 'tearing apart' or 'forcible separation' (Webster) and in such sense may properly denote a cutting away of the bank alone" (407). The court went on to give a more detailed definition of the term when it stated that:

> The sudden removal of land from the estate of one man to that of another by an inundation or a current, or by a sudden change in the course of a river by which a part of the estate of one man is cut off and joined to the estate of another. The property in the part thus separated continues in the original owner (407).

The *Willett* and *State* cases are important to Oklahoma case law because they defined two of the most basic and important terms associated with riparian land disputes. The

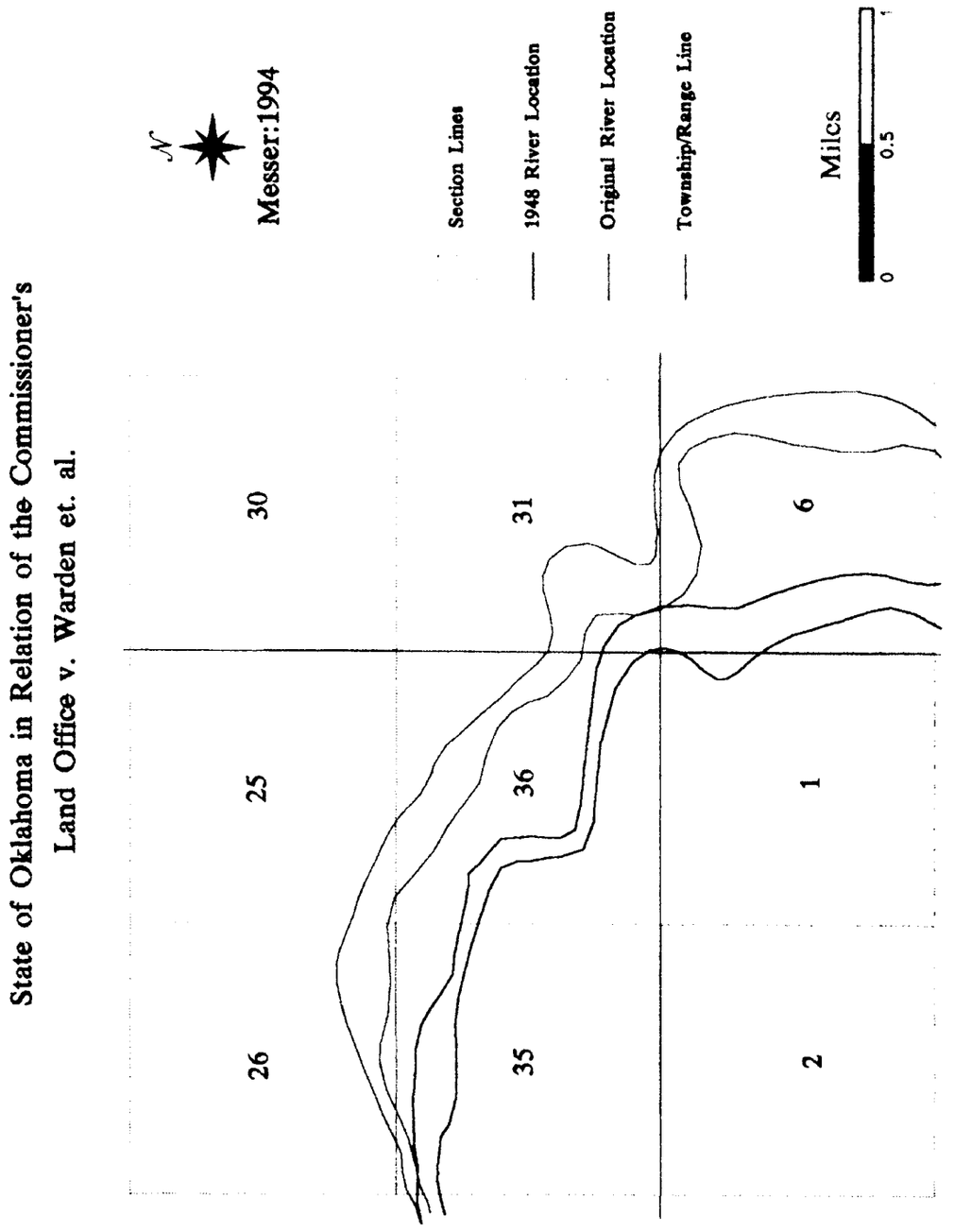

Figure 4. ***State of Oklahoma in Relation of the Commissioner's Land Office v. Warden et al.*** **Case Map**

definitions of these terms however, have done little to solve the problems associated with this topic since they are subjective and must be interpreted by the courts. There is no defined measurement or time period used to distinguish between the amount of movement constituting an accretion or avulsion. Instead each case must be judged on the circumstances involved which leads to inconsistencies in decisions and an instability in riparian land titles.

Hodgden v. Kliewer

The problems with subjectivity and the instability of riparian land titles is perhaps best illustrated in the opinion of *Hodgden v. Kliewer* (1976). The case involved riparian property bordering the non-navigable Cimarron River located in Sections 1, 2, 11, and 12 in Township 22 North, Range 13 West (Figure 5). In this dispute the lawsuit was filed after the mineral rights had been leased for oil and gas exploration.

The Cimarron's movements had caused a dispute over essentially the same piece of property as was fought over in 1934. In *Mitchell v. Meyer* the District Court of Major County held that the river had moved north by accretion from the United States Government Survey of 1873. The 1934 movement was within the river's banks, which had been surveyed in 1873 as one-half to three-quarters of a mile wide (Stonecipher 1983).

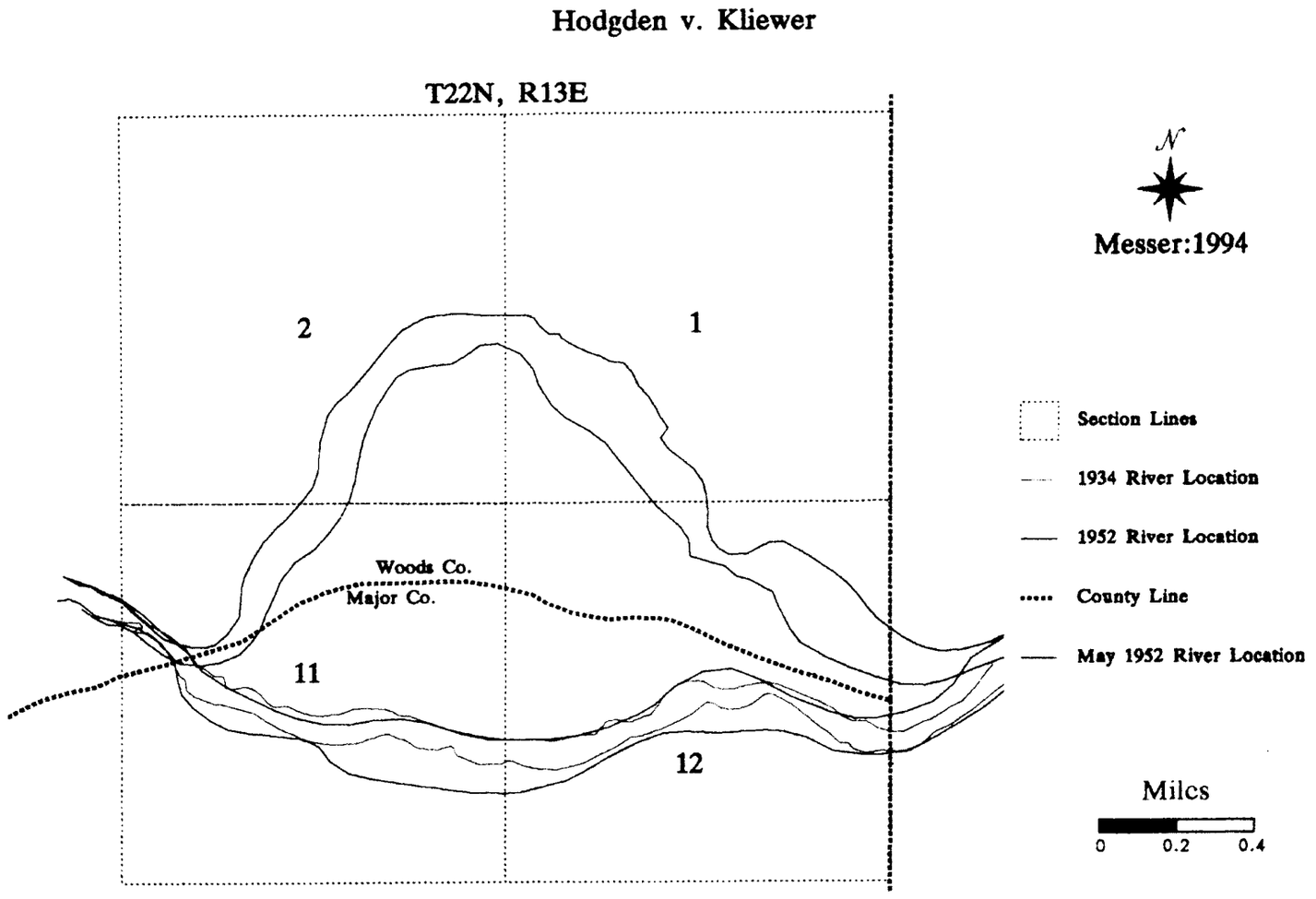

Figure 5. *Hodgden v. Kliewer* Case Map

Between 1934 and 1952 the Cimarron River moved farther north until in May of that year it changed its location to the south as the result of a single flood. Both appellant Hodgden and appellee Kliewer claimed to own land lying north of the river as it existed at the time of the trial (Figure 5). The trial court, in reaching its decision, held that:

> The river moved north by the gradual and imperceptible process of accretion, adding such accreted land to the riparian lots on the south bank of the river. The river, when at its northernmost point of the "hump," moved south by the process of avulsion during the flood of May, 1952, thereby cutting a new channel of the south side of the "hump"... the avulsive process did not affect the ownership of any of the "hump" (885-86).

Kliewer, who won the lower case ruling, argued that the Cimarron River's movement northward had been by the accretion process as judicially determined in *Mitchell v. Meyer* (1934). Kliewer also argued that the determination in the 1934 case was conclusive and established a presumption that accretion continued unless rebutted by clear and convincing evidence.

Hodgden contended that in both instances the river had moved by the process of avulsion and by virtue of state statute the ownership should remain with the original owners. Hodgden also argued that even if the river had moved to the north by accretion and back to the south by avulsion, an original owner who loses riparian land through the river's movement would be restored such land if the river later receded to its original channel. The latter argument deals with the "reappearing riparian lands

doctrine" and will be discussed later.

Hodgden's arguments were rejected and the lower court was upheld. The State Supreme Court held that the "reappearing riparian lands doctrine" did not apply and instead used the common law doctrine of accretion as a guideline for its decision. Since Hodgden failed to prove that both of the river's movements were by avulsion rather than accretion, the Court's decision was not in his favor.

The decision in *Hodgden*, though correct as the law now exists, is ironic since the land in question was originally under the ownership of Hodgden's predecessor in title. Over a period of years the Hodgden estate had dwindled through the slow process of accretion and erosion; when that land was finally rejoined with his riparian property, Hodgden found he had no legal right to possess it.

The *Hodgden* decision brings into question an apparent lack of equity in decisions of this type where a river's movements are not consistent. The accretion doctrine seems the most fair or equitable way of determining riparian ownership when a river's movements are of the same type. When, however, the river's movements are sometimes by accretion and sometimes by avulsion, it seems the accretion doctrine is an inadequate way to determine ownership. Unfortunately the possibilities for changing this practice seem remote at best. The "reappearing riparian lands doctrine" has been instituted in Oklahoma in an effort to

stabilize riparian land titles and increase the fairness of dispute resolution, however its effectiveness is debatable.

The Reappearing Riparian Lands Doctrine

The doctrine of "reemergence" or the "reappearing riparian lands doctrine" as it is also known, is designed to make the laws that govern riparian ownership more equitable. This doctrine is applied to riparian land that is lost and then regained, usually by accretion, so that title is returned to the original landowner. Created to prevent nonriparian landowners from becoming riparian owners due to a river's shift, the doctrine usually requires that the original boundaries are capable of being identified or determined.

The doctrine of reemergence was first created by the South Dakota Supreme Court in the case of *Allard v. Curran* (1918). The case concerned a tract of nonriparian land that became riparian through the accretive movement of a river's bank. Later, also by accretion, the river receded, restoring the original riparian lot. The landowner whose land became riparian due to the river's first movement claimed that the property should be added to his under the common law of accretion.

While the South Dakota Court recognized the common law of accretion as the means for determining riparian ownership, it chose not to apply it in the *Allard* case. The

court felt that the accretion doctrine was not an equitable solution for the circumstances it faced. The court stated: "We believe that after appellant's land had been restored by the action of the river, being capable of identification, it belonged to appellant and should be treated as though it had never been submerged at all" (761).

One justification for not applying the common law doctrine of accretion was stated by the court as follows:

> This rule appears, as is indicated by some of the above-quoted language, to have sprung from the fact that, when the riparian estate is destroyed and carried away, the boundary line between that andthe adjacent estate is obliterated and lost, and that, in case of restoration by accretion or reliction, there is no way of identifying the original estate, and therefore it is deemed to have been entirely destroyed and lost. But no such reason exists in this case. The boundary line between the lands of appellant and respondent was a government section line, and of course can be re-established without difficulty. In the absence of the reason, there is no justification for the rule. (761).

Oklahoma, like South Dakota, has attempted to stabilize its riparian land titles by utilizing the "reappearing riparian lands doctrine," also termed the doctrine of reemergence. In reference to this doctrine the Oklahoma statutes are worded as follows:

> Under both Oklahoma and federal law, upon reemergence of submerged lands, title thereto is restored in original record titleholders under "doctrine of reemergence," if boundaries thereof following reemergence are capable of identification or determination. Choctaw and Chickasaw Nations v. Tibbetts, D.C.Okl., 430 F.Supp, 714 (1977).

There are a number of Oklahoma decisions concerning the reappearing riparian lands doctrine, including the Oklahoma

Supreme Court's 1932 decision in *Hunzicker v. Kleedon* (1932). This decision was perhaps the most important of such cases as it was the first of its kind in the state. Most decisions concerning the reappearing riparian lands doctrine after 1932 cite the *Hunzicker* case as an important precedent, that is generally followed.

The case concerned land bordering the North Fork of the Canadian River. Hunzicker, the plaintiff in the case, owned property that was not originally riparian but became so when the defendant's land was completely submerged or eroded by the river's avulsive movements. Kleedon and McArthur, the defendants, had their right to drill an oil well challenged by the plaintiff and his oil company after the river subsided, uncovering their property. Kleedon's contention was that his property had become riparian and the land formerly belonging to the defendants had accreted to his riparian estate and was legally his. The trial court found in favor of the defendants and the Oklahoma Supreme Court was asked to evaluate the validity of that decision.

The Oklahoma Supreme Court upheld the lower court's decision stating that while it realized there was a conflict in the authorities concerning this topic, it felt that the reemergence doctrine was the best choice in determining ownership of the land in question. The court cited *Allard* as well as a number of similar decisions and made its own contribution to the theory when it stated:

> ...where a nonnavigable stream, such as the north fork of the Canadian River, erodes away a portion of the land of defendants, defendants' title to said land continues to exist so long as any portion of that part of the land which was defendants continues to exist as a part of the river bed, and of course under this theory and under the theory of the cases cited above, when the river recedes and abandons the river bed, said land continues to be the property of the former owners (385).

The above quote vests ownership of a stream's bed to an individual other than the riparian owner, an idea that conflicts with traditional concepts of riparian ownership. Traditionally, on a non-navigable river or stream, the riparian owner would take ownership to the center of the bed. The concept of awarding title to a stream's bed to anyone other than a riparian owner is extremely unusual and in fact has not been mentioned in any Oklahoma decisions since the Hunzicker case.

Mikel v. Kerr

The doctrine of reemergence was used in the United States Court of Appeals for the Tenth Circuit's decision of *Mikel v. Kerr* to stabilize riparian land titles, preventing a riparian landowner from losing their entire property through the accretion process (1974). The rule as applied in this case is used if the river returns to its original location and the landowners' property boundaries are able to be identified.

In the *Mikel* case, the property in question was located in Oklahoma's LeFlore county at the confluence of the

Arkansas and Poteau Rivers. Doris Mikel, the plaintiff in the case, had lost the lower decision and appealed to the U.S. Court of Appeals for the Tenth Circuit.

When surveyed by the United States Geologic Survey in 1898, the property of Kerr's predecessor in title was riparian to the Arkansas River. As the Arkansas moved, however, the defendant's property became completely submerged so that Mikel's property came to border on the river. Eventually the river returned in the direction it had come from and moved even farther south than its 1898 position. Mikel claimed title to all the property added to her newly acquired riparian estate while the defendants claimed title to their original property as well as the newly created property.

Mikel's rights to the property in question would have been upheld if Oklahoma had not applied the reappearing riparian lands doctrine. Mikel argued that the doctrine, as applied by the court in the *Hunzicker* decision, applied only in situations where a river has moved first by avulsion. She contended that when a river's movement is gradual, as in her case, the law of accretion should dominate.

The U.S. Court of Appeals for the Tenth Circuit rejected Mikel's argument and upheld the lower court ruling. The court was not persuaded that the reappearing riparian lands doctrine as stated in *Hunzicker* was limited to cases where a river's movement was first by avulsion. The court

stated that while the movement in *Hunzicker* was characterized as "abandonment of the channel," a term generally associated with avulsion, the rule as announced in the case applies whenever a river subsequently "recedes," uncovering land that was riparian. The latter term is generally associated with accretion so the court felt that limiting the application of the reappearing riparian lands doctrine to cases of avulsion alone would be inappropriate.

Ford v. Harris

The case of *Ford v. Harris* is another important decision reached by the Oklahoma Supreme Court (1963). The case involved the western half of the southwest quarter of Section 28, Township 9 North, Range 3 West, located in Cleveland county (Figure 6). This area is bounded on the south by the nonnavigable South Canadian River.

At the time the area was surveyed in 1898 the Harris land was riparian and was located between the Ford property and the river (Figure 6). Between the years 1902 and 1915, the river moved to the north gradually submerging the Harris land until it eventually cut off one corner of Ford's land so that it became riparian (Figure 6). After 1915 the river moved back to the south so that Harris's land was restored and capable of identification (Figure 6).

Ford, the plaintiff in the case, claimed title to the property that was added to his land by accretion. He

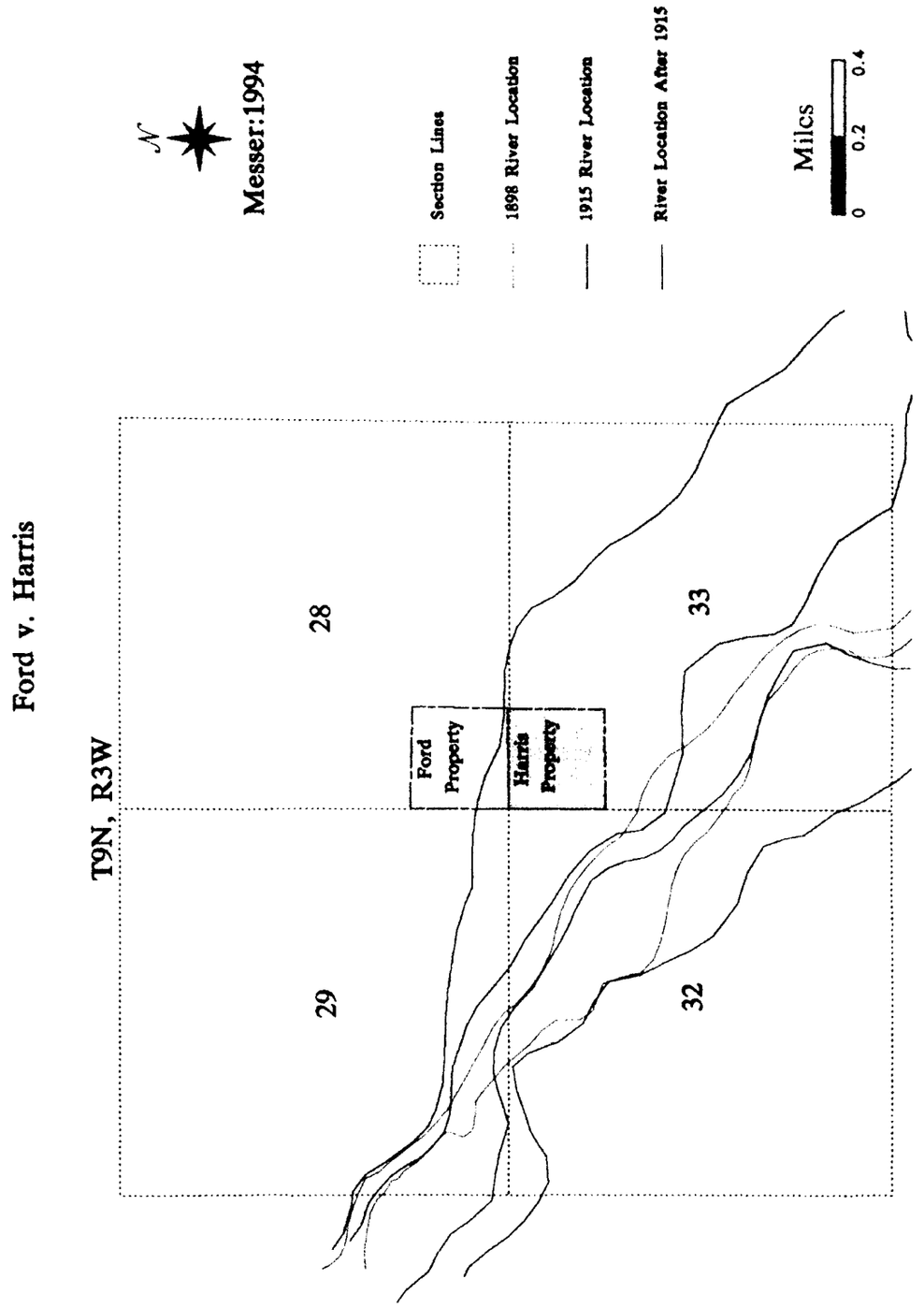

Figure 6. ***Ford v. Harris*** **Case Map**

claimed that because his land had become riparian, when the river moved to the south he should be entitled to the newly created land under the common law of accretion. The district court of Cleveland County rejected Ford's argument and the Oklahoma Supreme Court had to evaluate the validity of the decision.

The Supreme Court upheld the district court decision, rejecting the argument that the original boundaries were destroyed by the river's movements. It said that, even though the riparian land in question had become completely submerged, when the river receded, the original landowner was entitled to his property which was identifiable by means of the government survey. Important points in this case are that both of the river's movements were by accretion and the boundaries of the property were determined by government survey.

The reappearing riparian lands doctrine as applied in the previous court cases was both an effective and equitable means of determining riparian ownership. The doctrine's effectiveness is often questionable however because the criteria for applying it is arbitrary. The geographic processes responsible for stream movement are considered only when occurring in a specific order, first by accretion then by avulsion. While the doctrine has been effective when applied, there have been instances where the courts have failed to apply it, although it may have been the most

equitable means of resolving a riparian dispute.

A case where the reappearing riparian lands doctrine was not applied was *Hodgden v. Kliewer*. Hodgden based his argument on the reappearing riparian lands doctrine and the *Mikel v. Kerr* decision. Since the doctrine had been applied to cases where a river's movements were first by avulsion and then by accretion, the doctrine might also be applied when a river's movements were first by accretion and then by avulsion (1976).

The Court rejected Hodgden's contention stating that the doctrine had been mistakenly endorsed by the Court of Appeals for the Tenth Circuit. The court stated, "there is no question about the reappearing riparian lands doctrine being the Oklahoma law where the river has moved in both directions by accretion" (889). But the court rejected the idea that the law also applied to circumstances where the river had moved first by accretion and then by avulsion.

Though the Supreme Court for Oklahoma felt the District Court had mistakenly endorsed the doctrine, it sustained the District Court's decision. This apparent contradiction creates an interesting if not troubling problem for Oklahoma case law concerning the reappearing riparian lands doctrine. Under present conditions the reappearing riparian lands doctrine applies to instances where a river's movements are only by accretion, or first by avulsion and then by accretion, but not if the movement is first by accretion and

then by avulsion.

This decision seems ironic since the statutes and the case law the doctrine is based on establish no such criteria for the doctrine's application. The reappearing riparian lands doctrine was created to prevent a riparian owner from losing the surface estate when the boundaries of that estate are capable of determination or identification. While Hodgden's lost property could be readily identified by government survey, the doctrine was not applied to his case and he lost the rights to his riparian property.

Accretion and Severed Mineral Estates

The doctrine of accretion can affect surface boundaries, as demonstrated, as well as boundaries below the earth's surface. Under the traditional method of property ownership, the surface owner controls not only the surface but everything above and below the surface as well. In accordance with this doctrine, when the property above, on, and below the surface is held by one owner, it makes sense for an accretive shift in the surface boundary to shift the subsurface boundaries. In this way the surface benefits of accretion are obtained and the surface and subsurface boundaries are consistent.

This concept works well when the same owner controls the surface and subsurface rights, however this is not always the case. Because gas and oil companies can obtain

these minerals without adversely affecting the surface of the earth, many landowners choose to sell the rights to their minerals without giving up the surfac ownership. Perhaps an even more common occurence is the retaining of the mineral rights by a property owner when they sell their surface estate.

Separating surface and subsurface estates is a fairly common occurrence due to the convenience the arrangement brings to the parties involved. Gas and oil companies generally have a limited interest in the surface. Landowners can make money from the minerals below their property while continuing existing agricultural practices with little inconvenience. The process of creating this dual ownership is called "severing" the estates, that is creating two estates from one.

Oklahoma's state code is an unusual one in that it attaches the addition or loss of mineral estates to the land overlying the minerals (60 Okl. St. Ann. Sec. 335). Consequently, the common law of accretion applies both to the surface estate and the mineral or subsurface estate, regardless of whether they have been severed. This application of accretion to severed mineral estates was utilized first in the Oklahoma Supreme Court's decision in *Nilsen v. Tenneco Oil Co.* (1980).

Nilsen v. Tenneco Oil Co.

The Nilsen case involved the southeast quarter of Section 4, Township 11 North, Range 9 West in Oklahoma's Canadian county. At the time of the original government survey, lots six and seven were north of the South Canadian River, while lots eight and nine were located to the river's south (Figure 7). Over a period of years the river gradually migrated to the north, creating new land between the river's south bank and lots eight and nine (Figure 7). The *Nilsen* case was a dispute between surface owners, mineral owners, and mineral lessees of the lands on the north and south banks of the nonnavigable Canadian River. The midline of the river was the boundary between the lands in question and had moved north since the original survey. The appellants in the case owned the property south of the river and claimed that the newly created land had been accreted to theirs, giving them legal title.

Adding to the complexity of the case was the fact that some of the estates had been severed at different times, while others had never been severed. The trial court recognized that the doctrine of accretion would apply to the surface estates of the newly created lands. The court however, did not apply the accretion doctrine to the mineral estates since severed minerals constitute a separate estate.

On the appeal, the Supreme Court reversed the lower court decision, holding that the ownership of severed

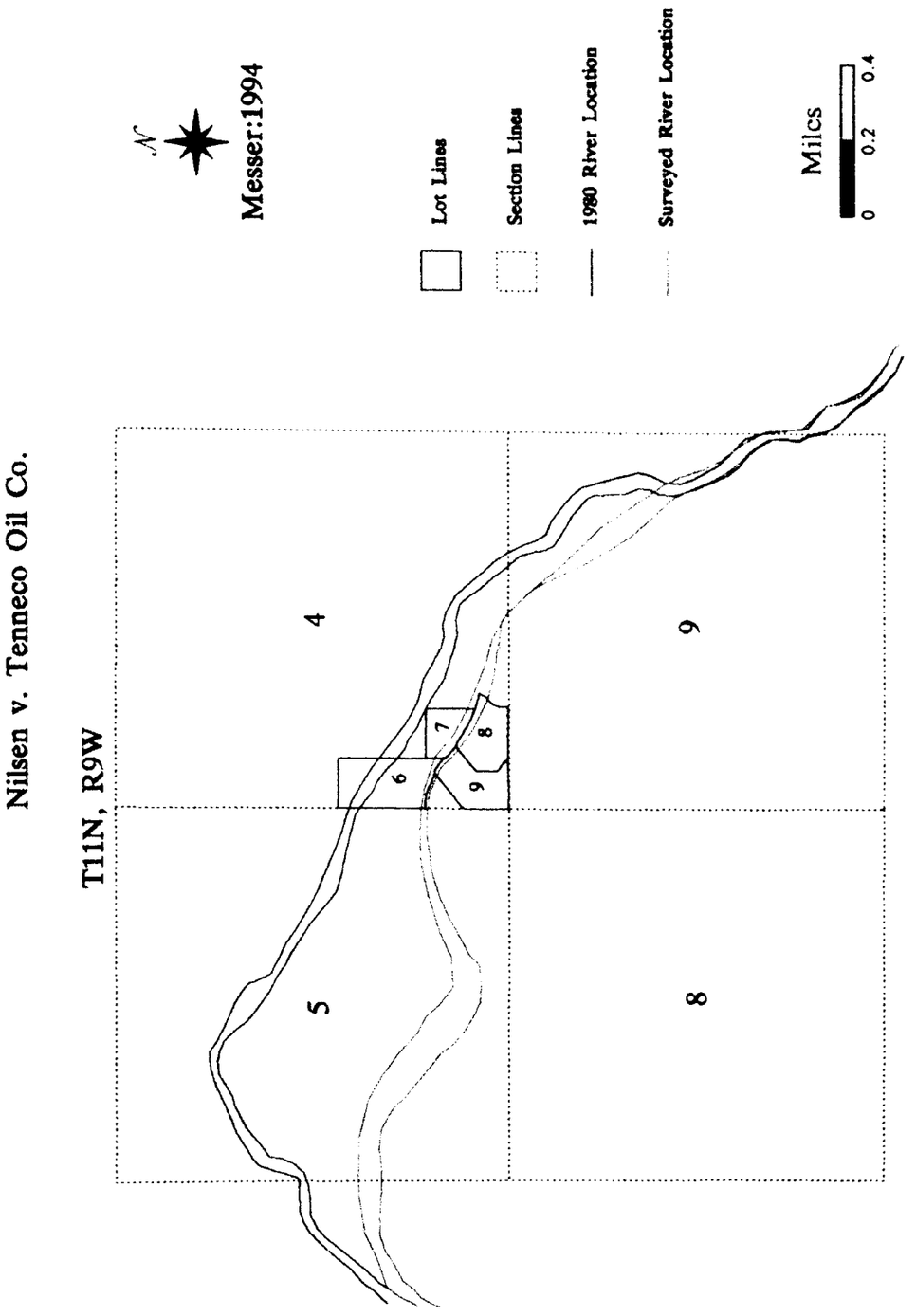

Figure 7. *Nilsen v. Tenneco Oil Co.* Case Map

estates should shift in accordance with accretive changes in the corresponding surface estates. The Court rejected the idea of a fixed boundary in part on "the axiom that a grantor may not convey an estate greater than that which he possesses" (36). Since an unsevered estate is subject to loss by erosion, it follows that the owner of an unsevered estate may not convey a severed mineral estate that is not subject to loss by erosion.

Additionally, the court claimed that a fixed boundary rule would result in "gross inequities" when an unsevered estate is bordered by a severed mineral estate (36). The severed estate would not be subject to erosion, so the unsevered estate could never gain by accretion. The unsevered estate however would be subject to loss by erosion and the severed estate, for all practical purposes could gain by accretion.

To illustrate this idea suppose that landowner X and landowner Y own property on the opposite sides of a nonnavigable river (Figure 8). Landowner X's estate is on the west side of the river and his minerals have been severed from the surface estate. Landowner Y's estate is located on the east side of the river and his estate has not been severed. Land could not accrete to the western portion of Y's estate since the eastern portion of X's mineral estate is a fixed boundary. However land could accrete to the surface estate of X since the surface and mineral

estates of Y's land are subject to erosion (Figure 8).

The above example brings up other issues concerning a fixed boundary rule for severed mineral estates. First, a mineral estate's owner would probably have an implied easement to go on the surface above his minerals, otherwise his property has, in effect, been taken from him. In the case of landowners X and Y, landowner X may have the right to use the surface of landowner Y though he has no written agreement to do so. Technological breakthroughs like horizontal drilling allow for mineral extraction without surface contact directly above deposits. These techniques greatly reduce the potential for disputes but the possibility still exists.

Another problem not addressed by the courts concerns the date of severing. If properties on opposite sides of a river were not severed at the same time, as was the case in *Nilsen*, then movements of the river or stream between the severing dates could cause overlaps in ownership or strips of unaccounted for minerals that have the potential to result in future conflicts and litigation.

Also among issues not discussed by the court in the *Nilsen* case is the fact that the boundaries of severed mineral estates would be difficult to determine if they did not fluctuate with surface movements. The effectiveness and efficiency of a fixed boundary would depend on whether a survey had been conducted at the time the estates were

Accretion and Severed Mineral Estates Illustration

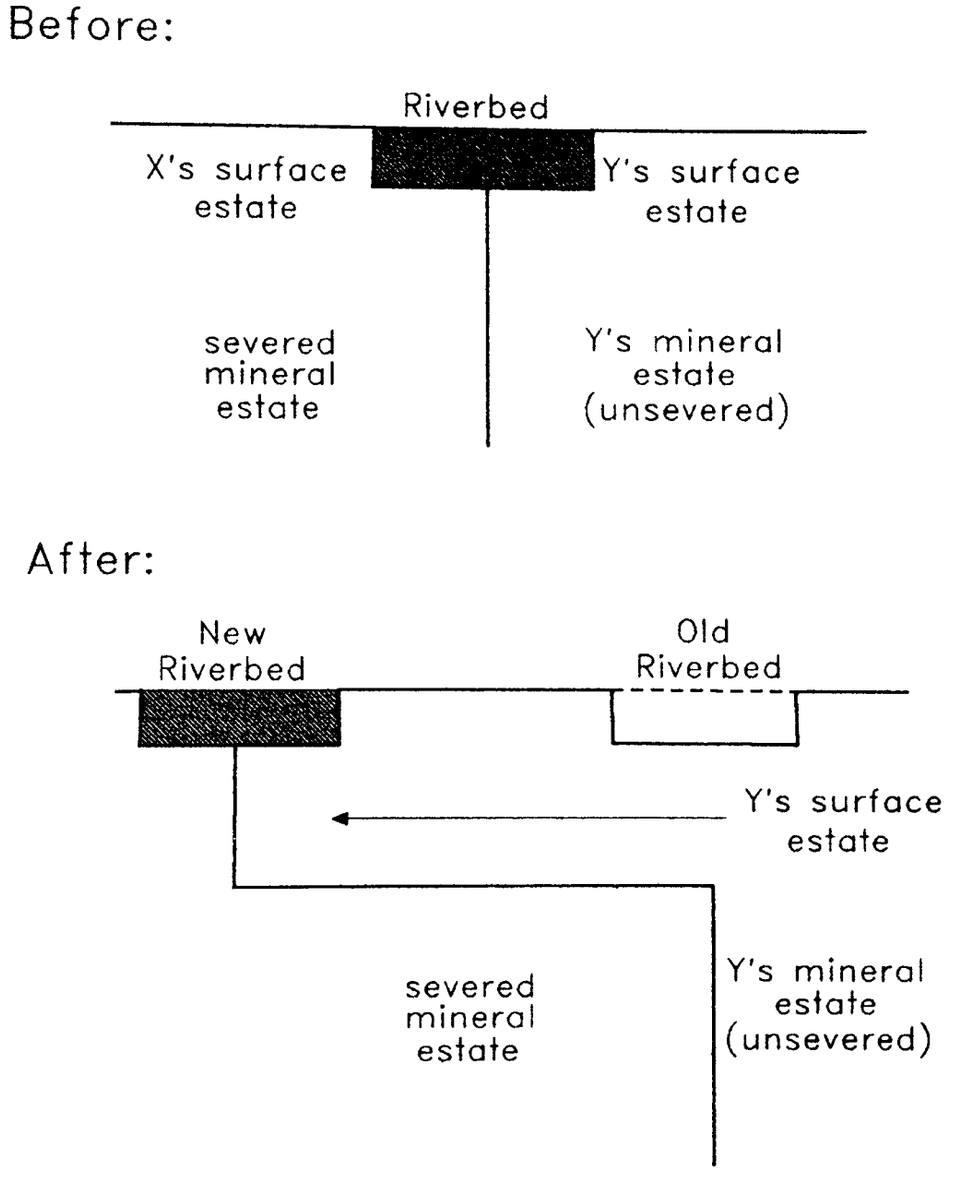

Figure 8. Accretion and Severed Mineral Estates Illustration

Accretion, Severed Estates, and State Ownership Illustration

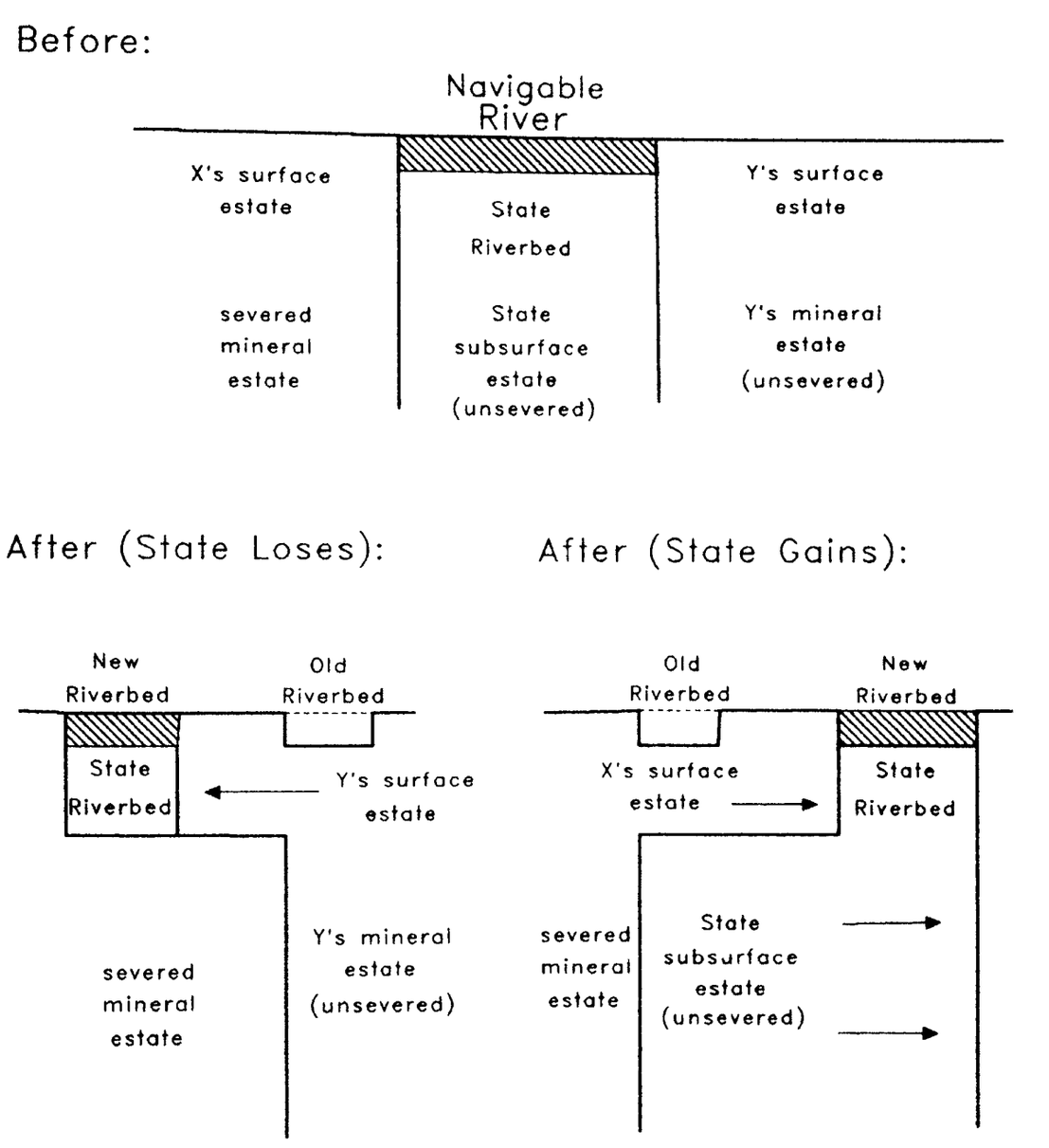

Figure 9. Accretion, Severed Estates, and State Ownership Illustration

Accretion, Severed Estates, and State Ownership Illustration

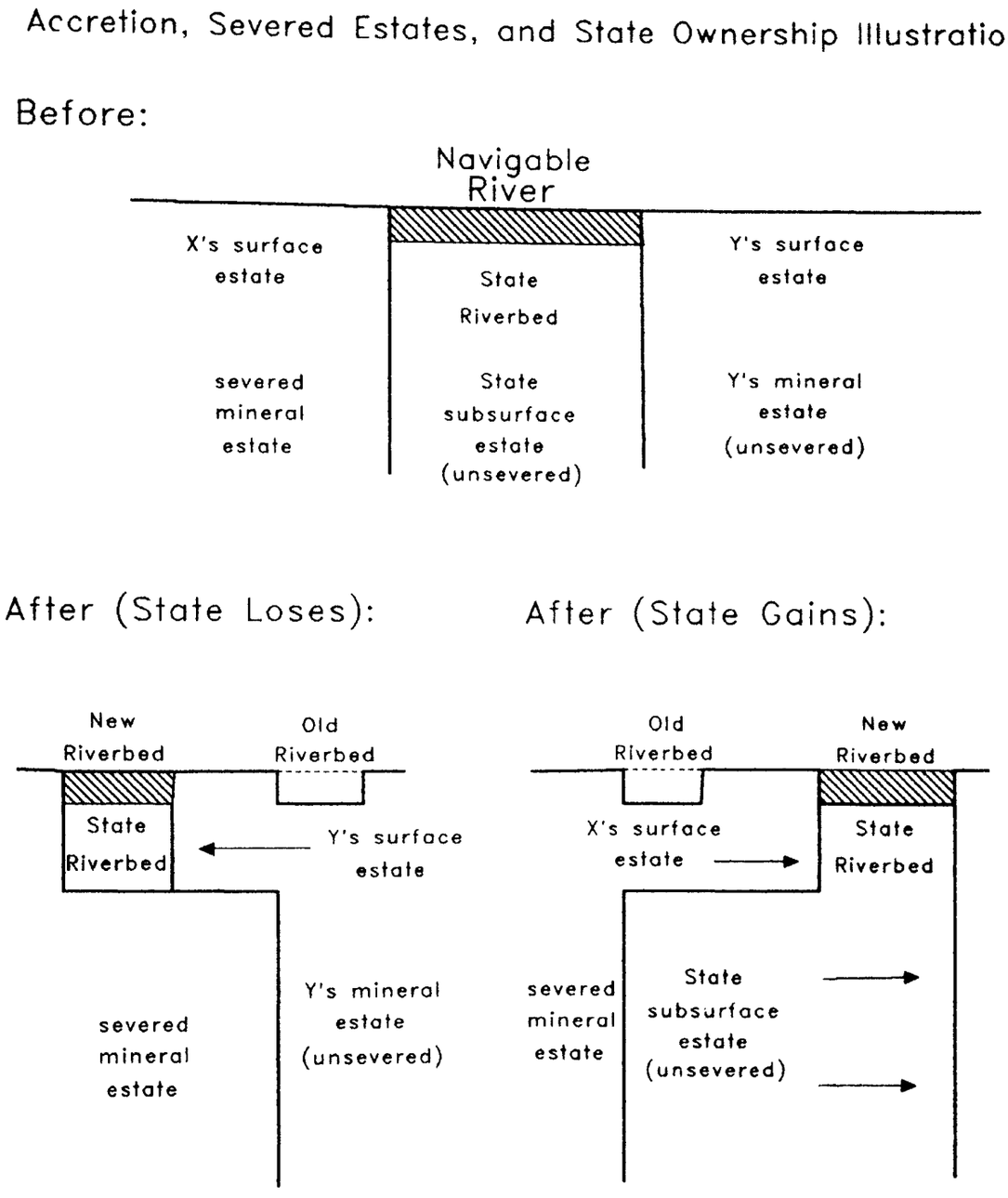

Figure 9. Accretion, Severed Estates, and State Ownership Illustration

The court noted that the state's mineral holdings could be squeezed out entirely if the west bank of the river were to advance past the river's original east bank. In this case the court noted that the result would be "clearly contrary" to a state statute that gives the state ownership to lands under navigable waterways (Kimball 1986).

The two decisions regarding the application of the accretion doctrine to severed mineral estates have received criticism from lawyers. The basis for this criticism comes from the established concept that the severance of minerals from the surface creates two separate estates, each one as distinct as if they constituted two different parcels of land (Murphree 1981). Under this idea, if the mineral estate is a distinct entity, since it is not subject to movement with a stream or river it should be a fixed boundary.

The law of accretion was created to protect surface ownership and provide for a means of accommodating a river's movements. Opponents of the application of accretion to severed mineral estates argue that the ease of this application to mineral estates is not a justification for its use. Because of the separate character of mineral and surface estates and their treatment as such under real property law, opponents of the doctrine feel the accretion doctrine should only apply to the surface estates it was meant to protect (Kimball 1986, Murphree 1981).

The application of the accretion law to severed estates is perhaps the most controversial of topics discussed and is also the most uniquely Oklahoman. While the state of Montana has extended the concept to include lands bordering navigable waterways their application and interpretation draw heavily from Oklahoma case law. It is still too early to tell the impact on future decisions in other states or even if the practice will continue here in Oklahoma.

Indian and Federal Interests in Oklahoma Stream Beds

The issue of stream-formed boundaries and Indian/Federal interest is especially salient in Oklahoma where the federal government made a number of treaties with Indian tribes prior to Oklahoma's statehood. The boundaries of the lands involved in these treaties often completely surrounded navigable waterbodies or used the waterbodies as boundary lines.

As mentioned earlier, the beds of all navigable waterbodies were granted to the states upon admission to the Union under the equal footing doctrine. There are exceptions to this state ownership one of which includes expressed or implied grants by the federal government to the state's predecessor in title. The courts, when faced with the issue of the tribal ownership of stream beds, must decide whether the federal government granted the beds of these waterbodies either through an express or implied

grant.

Oklahoma has a strong Indian heritage and in the early days of statehood, prior to the Indian lands allotment process, the conflicts between tribal and state interests were common. These conflicts are of historical importance because the United States government was often involved, acting in the interests of the Indians. These early Oklahoma conflicts are important because they affected today's standards. Two major cases of this type exist in Oklahoma, both dealing with the ownership of the Arkansas River's bed.

Brewer-Elliott Oil & Gas Co. v. United States

Brewer-Elliott Oil & Gas Co. v. United States involved a conflict between the Osage Indians and the state of Oklahoma over ownership of the Arkansas River bed (1922). The State of Oklahoma had leased the mineral rights to the Arkansas River bed to the Brewer-Elliott Oil & Gas Co. which drilled for oil and gas. The federal government, representing the interests of the Osage Indians, sued for an injunction to quiet title to the area in dispute. The federal government's argument was if the Osage Indians owned the mineral estate of the adjoining land they also owned the mineral estate to the middle of the Arkansas River. The state of Oklahoma intervened as a defendant claiming that it owned the river bed because the title was passed to it upon

its entrance to the Union.

The lower courts ruled that the Arkansas River, above its confluence with the Grand (Neosho) River, was nonnavigable and since the Osage took title to the river bed from the Cherokees in 1872 (long before Oklahoma became a state) they should own to the middle of the river. The Eighth Circuit Court held that it did not matter if the river was navigable or nonnavigable at that point because the United States had the right to grant the ownership of the bed prior to statehood and had done so. The Supreme Court upheld the lower two decisions and the Osages' ownership extended to the middle of the Arkansas River bed.

Choctaw Nation v. Oklahoma

In the second landmark case, *Choctaw Nation v. Oklahoma*, the state had once again leased the gas and mineral rights on the Arkansas (1970). The area under dispute was located below the confluence with the Grand River and the Arkansas, which under the federal definition, is considered a navigable river. The Arkansas River, at this point served as the boundary of the Choctaw nation's land and as the boundary between lands belonging to the Choctaws' and the Cherokees'. The district court entered judgment against the tribes stating that they could not have a legitimate claim to the bed since the title remained with the United States until Oklahoma's admission to the union at

which time the title was passed to it. The Tenth Circuit court affirmed this judgement and the case eventually went to the Supreme Court.

As the court examined the tribes' claims it noted that not only title to the stream bed and minerals was involved, but also the ownership of riparian land created by the channel's change as a result of the Arkansas River Navigation Project. The Indian tribes involved in the suit based their case on three different treaties signed in 1830, 1835, and 1837 all of which used the terms "up" or "down" the Arkansas when establishing the boundaries. The state based its case on the contention that the United States would have employed more conclusive language if it had really intended to include the title to the river bed of a navigable watercourse. The court found in favor of the plaintiffs with six reasons for reaching the decision (Gibson 1976).

First, in treaty construction all doubts and ambiguities in Indian treaties will be resolved in the Indian's favor. This rule results from the fact that Indians had treaties imposed upon them without real consent. Furthermore, one of the treaties referenced in this case stated, "in the construction of this Treaty, wherever well-founded doubt shall arise, it shall be construed most favorably toward the Choctaws" (Gibson 85, 1976).

Secondly, in the treaty with the Cherokees the phrase

"thence down the main channel of the Arkansas River" was used when defining the boundary.

Thirdly, the court noted that Congress used the terms "up" and "down" the river when using a navigable stream or river as the boundary between states in which case the boundary was set at the river or stream's midpoint. the court decided that since the Indian nations were sovereign entities, Congress must have intended the words to carry the same weight.

Fourth, the United States could have said "north side" or "south side" of the river if it had not intended for the boundary to extend to the river's midpoint since it had done so in other treaties. The United States knew how to avoid a transfer of rights to the river bed, and if it had intended to do so it would have used the language necessary to make it clear.

Fifth, if the United States wanted to exclude the river bed it could have done so. Congress could have made an "express exclusion of the bed of the Arkansas River" as it had done in other instances. The fact that Congress did not do so indicates that they intended to transfer ownership of the Arkansas River bed to the Indian tribes involved.

Lastly, the state of Oklahoma's claim that the United States was holding the bed of the Arkansas River to convey it to Oklahoma upon its entrance to the union is unfounded. The treaties made it very clear that the lands involved

would never become part of another Territory or State. The treaties also stated that no State or Territory would have the right to pass laws for their nations as long as they lived on the land.

In the Choctaw case, the court found that the treaty description of the Indians lands specifying only exterior boundaries clearly included all the lands lying within those boundaries and therefore included the river bed. More important to the Court than the particular language of the grant were two long recognized rules of Indian Treaty Construction. The first, doubtful expressions in treaties should be construed in the Indian's favor. The second stated that treaties with Indians must be interpreted as the Indians would have understood them at the time of the treaty signing (Vance 1982).

In the case mentioned above, the Supreme Court's decision would seem to have set a precedent in such cases. One would think that the decision would result in future cases in the Indian's favor when the terms of the treaty were questionable. In 1981 though the Supreme Court's ruling in a similar case, *Montana v. United States*, involving the state of Montana and the Crow Indians concerning the ownership of the Bighorn River bed had a quite different outcome (Vance 1982).

The court's ruling has been interpreted as meaning "that the presumption of state sovereignty over lands lying

beneath navigable waters takes precedence over the canons of treaty construction" (Cole 1985). It is important to note that the circumstances of this case were not exactly the same and the court was able to avoid overturning the previous Oklahoma cases. This case is important though because it seems to show that the conflicts between tribal or state ownership of navigable river beds must be viewed and interpreted on an individual basis taking into account the specific language of the treaty in question.

CHAPTER IV

CONCLUSIONS

Introduction

As demonstrated in this study, the legal problems associated with boundaries are numerous and complex. The four issues addressed by no means compose the parameters of this topic but instead make up a few of the most common or important conflict areas. There are numerous other issues related to this topic but because the conflict resolution process is very similar they all fit well into the classification scheme used. Braided streams, meandered streams, and stream-formed boundaries between larger political entities are also worthy of geographic and legal analysis using Matthews' model.

One of the objectives of this thesis was to shed light on management issues dealing with an unstable boundary. While the laws governing stream-formed boundary movements in the four major conflict areas have been outlined, a contribution to the fields of geography and law can only be obtained upon the analysis of these laws. After analyzing the law's position on these issues and the geographic elements which determine stream movements, suggestions for improvements in the law or management techniques may be made.

Accretion Versus Avulsion

The laws governing stream movement in Oklahoma are clear but application to a specific situation may not be. Legally, when a river or stream is the boundary between property owners and it moves through the gradual and imperceptible process of accretion, the property line moves with it. A stream or river that moves through the sudden change of avulsion has no affect on the boundary as it remains where it was prior to the movement.

While the laws are stated in a clear manner the interpretation and application of those laws are subjective. What is a gradual and imperceptible or "natural" movement as opposed to a sudden one? Since accretion and avulsion are dictated by the fluvial process they are both natural movements yet they must be distinguished from one another by the legal system. This brings about inconsistencies when decision makers do not understand the physical processes that dictate movement or they try to apply the same criteria to different types of streams.

In the eastern parts of Oklahoma, due to local relief, the streams are more straight and move less frequently. The gradual and imperceptible movements are easier to distinguish from the sudden ones. Because of this fact the accretion vs. avulsion controversy is less common and less salient. The western part of the state is very different however, where because of the relative flatness of the

landscape and the composition of the soils, rivers move frequently and cover larger distances. In these cases it becomes increasingly difficult to distinguish between accretion or erosion and avulsion.

The Oklahoma Statutes state that accretion includes the erosion and deposition of soil while an avulsion involves a river or stream leaving its banks to form a completely new one. Also and perhaps contradictory is the stipulation that an accretive movement must be a gradual and imperceptible one. Accretion and erosion may always be gradual and imperceptible in the eastern states where these laws originated but in the western U.S. the terms are not synonymous.

The reason for using the terms "gradual and imperceptible" in the definition of accretion was that they are supposedly indicative of a stream's movement from a natural occurrence. This assumption is incorrect however, since the "natural" rates of accretion and erosion are dependent upon the geographic characteristics of the area involved. Slope, soil or rock type, and water volume are some of the most important factors. The rapid movement of a river or stream is not necessarily indicative of an avulsion. In fact the frequency of movement in the western parts of the state tend to indicate that the rapid movement is as natural as a "gradual and imperceptible" one.

The makers and interpreters of Oklahoma laws should be

aware that the same set of riparian laws cannot be applied to different types of streams and rivers in the same manner. The possible solutions to this problem include revising state statutes so that a distinction is made between the erosion process, regardless of rate, and the whole-scale movement of a river's bed instead of assuming that rapid changes always constitute an avulsion. Perhaps more practical would be the increased awareness by the interpreters of the law to account for the physical characteristics of the streams in individual cases.

There is a difficulty in developing a means for classifying streams so that the erosion process is accounted for regardless of the rate at which the "natural" movement takes place. Developing a well defined classification system is not a viable solution since many streams and rivers display characteristics of different stream types at various points along their flow.

There are however, characteristics which certain streams possess that can tell the interpreters of riparian ownership laws that different criterion should be used to determine what constitutes a "natural" movement of a river or stream. An expanded definition of accretion should be used on streams and rivers that display the following characteristics: the absence of a well-defined bank, an extremely wide floodplain, multiple channels which carry water, and the presence of vegetation in the channel.

Streams and rivers which display these characteristics should be expected to move frequently and cover relatively large areas of riparian land even under normal or "natural" conditions.

Reappearing Riparian Lands Doctrine

The reappearing riparian lands doctrine or the doctrine of reemergence is an important concept created in South Dakota but adopted in a few other states, including Oklahoma. The doctrine is designed to create stability in riparian land titles by returning land that has been submerged and then restored by a river's movement provided the property is able to be identified using a government survey.

This doctrine is a unique and equitable way of determining riparian ownership when applied, but the criteria for its application is unclear and perhaps incorrect. In Oklahoma for example, though not stated as such, the doctrine is used to prevent a nonriparian owner from becoming a riparian owner. Under current conditions the Oklahoma courts apply the reappearing riparian lands doctrine when a river moves in both instances by accretion or if it moves first by accretion and later by avulsion. The doctrine however, is not applied when a river's movement is first by accretion and then by avulsion.

This apparent flaw in the application originates in the

definition of the doctrine in Oklahoma case law. The doctrine is supposed to be applied when a riparian owner's land is submerged and later restored provided it can be identified using a government survey. No distinction is made as to the processes that result in submergence and restoration yet the courts have applied the doctrine in only certain cases where this restoration and submergence occurred by a defined combination of physical processes.

If the doctrine of reemergence is designed to stabilize riparian land titles then it makes sense to require a stable boundary like a government survey line to overrule the natural movements of a river or stream. If government survey lines are stable and unmoving then it is obviously a more equitable way of determining riparian ownership. This equitability is quickly lost however when the doctrine is not applied in cases like *Kliewer v. Hodgden* where the land was lost and restored by a river's movement and was identifiable using a government survey, but was not rejoined with its original estate.

Less confusion could be achieved if the doctrine were to be interpreted as stated, applying it when land is lost and restored by the movement of a river if it is capable of identification by means of a government survey. To apply this stabilizing factor in only some instances contradicts its very nature and only adds to the instability of riparian land titles. The doctrine should be applied in all cases

where land is capable of distinction or in none at all. At the very least the law should be rephrased so that the circumstances required for it to apply are more clearly stated.

Accretion and Severed Mineral Estates

The application of the common law of accretion to severed as well as unsevered mineral estates, while highly criticized, achieves a consistency that the reappearing riparian lands doctrine cannot. The application of the doctrine to all surface and mineral estates, while eccentric, makes the process of determining ownership easier and in some ways more equitable. This equity is achieved by treating the owners of severed and unsevered mineral estates in the same manner by applying the same set of rules to both.

If the accretion doctrine did not apply to severed mineral estates then conflicts between riparian owners would be frequent and highly complex unless the mineral estate owners negotiated an agreement to a fixed boundary between their estates. Otherwise the boundaries between estates would be dependent upon government surveys and if estates on opposite banks of streams were not severed at the same time further complications could arise. Bordering estates severed at different times could result in overlaps or gaps in ownership depending upon the direction and distance of

the watercourse's movement between the severance dates. Rather than stabilizing ownership these inconsistencies could add to the legal confusion by fostering more litigation.

One confusion and unfairness created by a fixed boundary rule would be the necessity by landowners to sever their mineral estates from the surface. By doing so a landowner could guarantee the stability of the mineral estate even if there was no intention to sell the mineral rights in the future. This complication could potentially result in the creation of severed mineral estates for all riparian lands creating unnecessary and complex legal descriptions of subsurface estates. This worse case scenario could be avoided however in light of new horizontal drilling techniques which allow access to minerals without ownership of the land directly over them.

The chances of overturning the present doctrine concerning severed mineral estates seem slim at best. The precedent established by the Oklahoma courts and expanded by the Montana Supreme Court seem solid especially with the involvement of the states as bedowners. The ownership and exploitation of the beds of navigable waterbodies is an issue the states take very seriously. With the states involved as participants in litigation, their interests will most likely be maintained.

Indian and Federal Interests in Oklahoma Stream Beds

The Oklahoma decisions involving federal and Indian interests in the beds of Oklahoma stream beds is perhaps the least salient of the issues discussed. These cases are important however because they demonstrate the legal system's approach to the issue of Indian ownership and navigable waters from a historical perspective. The most recent cases show the present approach taken by the courts in an attempt to maintain the interests of native Americans.

The cases are also important because they demonstrate the potential for federal vs. state conflicts concerning the rights to navigable waterbodies. Results of past cases have tended to reinforce the supremacy of the federal government when it comes to regulating navigable waters and the beds beneath them. While the states may not agree with the results the chances for change are not great.

Call for Research

The contents of this thesis were designed to clarify the laws governing stream-formed boundaries in an effort to improve management practices. Vagueness of legal terminology is a significant problem which ignores geographic reality. The subjective portion of the law is the most confusing and is given the most freedom by the legal system, causing a blurring of the parameters of stream-formed boundary law.

Hopefully, this paper will be a starting point for future research in this area. Similar studies in other states by geographers may allow for comparisons of state policies. Eventually the desirable characteristics of individual state policies may be combined to form a model state law that could be implemented in all parts of the country.

The state of Oklahoma has the potential to contribute to this process with policies like the reappearing riparian lands doctrine and its approach to severed mineral estates. While improvements in these policies need to be made they are at least a start to clarifying riparian ownership on a national scale.

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APPENDIX B
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VITA

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Master of Science

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Education: Graduated from Nodaway Holt High School, Graham, Missouri in May 1987; received Bachelor of Science degree in Geography and English from Northwest Missouri State University, Maryville, Missouri in May 1991. Completed the requirements for the Master of Science degree with a major in Geography at Oklahoma State University in July 1994.

Experience: Raised in the rural community of Soldier, Kansas; employed as a camp counselor/program director at Camp Forty Legends in Washington, Missouri Summers 1988-1991; employed by Oklahoma State University, Department of Geography as a graduate teaching assistant; Oklahoma State University, Department of Geography, 1991-1993; employed by the Central Oklahoma Economic Development District as a Planning and Information Systems Coordinator, in Shawnee, Oklahoma, 1993 to present.